DOCUMENT RESUME

ED 324 289 SP 032 623

AUTHOR Huber, Tonya; Pewewardy, Cornel

TITLE Maximizing Learning for All Students: A Review of Literature on Learning Modalities, Cognitive Styles and Approaches to Meeting the Needs of Diverse Learners.

PUB DATE 90
NOTE 95p.
PUB TYPE Information Analyses (070) -- Reference Materials - Bibliographies (131)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Brain Hemisphere Functions; *Cognitive Style; *Cultural Differences; *Cultural Pluralism; *Ethnic Groups; *Learning Modalities; Literature Reviews; Locus of Control; Multicultural Education; Nonverbal Communication; Sensory Experience; Socioeconomic Status; *Student Characteristics; Teaching Methods

ABSTRACT

This review of journal literature proposes that ethnic/race-specific research on cognitive/learning styles provides models for cross-cultural and multicultural classrooms that will maximize learning through building self-esteem and devoloping a reason for learning. The intent of the review was to discover patterns and themes developing across cultures and across studies. Highlights of journal articles are provided in table format; an index to citations follows the table. The aspects and findings are categorized to develop a taxonomy of aspects and learner orientations. The taxonomy provides topical groupings that facilitate further identification of cross-cultural aspects and implications for maximizing learning for all students. The focus is on how the background factors that students bring to school can be matched by school policies suitable for a variety of students. (JD)

MAXIMIZING LEARNING FOR ALL STUDENTS: A REVIEW OF LITERATURE ON LEARNING MODALITIES, COGNITIVE STYLES AND APPROACHES TO MEETING THE NEEDS OF DIVERSE LEARNERS

Tonya Huber, Ph.D.
Assistant Professor
Department of Curriculum and Instruction
The Wichita State University
Box 28
Wichita, Kansas 67208-1595
(316) 689-3322

and

Cornel Pewewardy, D.Ed.
Center for Research on Minority Education
The University of Oklahoma
601 Elm Avenue, Room 146
Norman, Oklahoma 73019-0315
(405) 325-4529

Maximizing Learning for All Students: A Review of Literature on Learning Modalities, Cognitive Styles and the Approaches to Meeting the Needs of Diverse Learners

In recent years, the research of cognitive neuro-scientists into brain processing, brain growth, and brain dominance has led educators to take another look at traditional instructional methods. In addition, learning-styles researchers have added to understandings of how heredity, experiences, environment, and cultural differences affect learning. According to Lesser (1976, p. 37), "people who share a common cultural background will also share, to a certain extent, common patterns of intellectual abilities, thinking styles and interests."

Previously, little specific information about how to maximize learning for diverse student populations had been documented. For example, Laosa (1977) pointed out that "childhood socialization practices that are characteristic of certain cultures tend to foster the development of particular cognitive styles" (p. 28), but gave only a few examples contrasting Mexican-American and Anglo-American children. One would need to research other descriptors and titles (such as learning styles) to find specific information on teaching diverse children.

The database for this review comes from journal articles (see Appendix A). It was obtained by way of a computer search of ERIC on Silver Platter for the years 1980-1988. Key descriptors were "cognitive style," "learning strategies," "learning modalities," and specific descriptors categorized under "ethnic groups" and "culture." Other studies were located by searching the references cited in these articles. The articles that were discovered in this search were all identified in the reference list, even if they were not included in the tabled categorization. A list of references by author (see Appendix B) was organized for easy access to specific researcher's studies.

A taxonomy was developed to provide topical groupings that facilitate further identification of cross-cultural aspects and implications for maximizing learning for all students (see Appendix C).

Learners at Risk

Students who are labeled "different" by virtue of race, language or linguistic diversity, sex, income status, handicap or learning difficulty or any student for whom education is an obstacle are learners at risk. The 1985 report Barriers to Excellence: Our Children at Risk c d the role of schools as central institutions in the ongoing effort to reverse the effects of economic deprivation and racial and cultural discrimination.

The rising number of school dropouts is the single most dramatic indicator of the degree to which schools are failing children. While the overall national dropout rate is 30 percent.

the rates for Blacks and Hispanics are higher than 50 percent in many urban school districts (Haberman, 1989). The degree of failure is even more dramatic and disturbing for specific populations. The Oklahoma State Department of Education 1984-85 Dropout Rate identified 45.7 percent of the female American Indian students and 54.3 percent of the male Indian students in that school year as dropouts (Oklahoma Department of Vocational and Technical Education, Summary Statistics: 1984-85 Final Dropout Report). By failing to educate such large numbers of students, schools actively help to perpetuate disadvantage and contribute to multi-generational cycles of poverty.

For Native Americans, the future is equally as bleak at rural reservation schools. Currently, at the Pine Ridge Oglala Community School, 50 percent of students between the ninth and tenth grades dropout. Only 25 percent of the freshman class will graduate. The overall student dropout rate and the overall adult unemployment rate are both about 85 percent at Pine Ridge (Sack, Beiser, Clarke & Redshirt, 1987). Bird (1984), Chairperson of the New Mexico Tribal Education Committee, reported: "At the University of New Mexico, the dropout rate for American Indian undergraduate students enrolled in the University College is an alarming 72 percent." Most of the Indian students attending the University of New Mexico, like those attending other colleges and universities in the State of New Mexico, graduated from public schools.

To achieve in public high school, students who are non-White, non-middle class, or non-mainstream must learn the appropriate middle-class behaviors and adopt the appropriate middle-class values. Those who do not must find a way to reconcile the values and/or behaviors of their subcultures with those of the mainstream culture (Luetgart, 1977). Those who cannot often dropout.

Teaching in a Multicultural Society

"In a sense, every classroom in the country is crowded because each child brings not only himself but also his friends, his family, his community, and the culture into which he has been born and is being raised" (Gold, Grant & Rivlin, 1977, p. 6). It is the reaction to these individual differences, not the differences themselves, that create social conflict; just as it is true that it is the reaction to different learning styles, not the differences themselves, that create classroom conflict in the form of discipline problems, low achievement, failure and dropping out. The schools in this country can no longer afford to cast themselves as the guardians of the status quo, of some idealistic view of mainstream America that ignores the diverse input of so many streams, tributaries, and wells -- America is a multicultural society.

Research suggests that people who share a common cultural background will also share common patterns of intellectual abilities, thinking styles and interests; ethnic groups,

independent of socioeconomic status, display characteristic patterns of thinking styles that are different from others (Gardner, 1983; More, 1987; Dunn & Griggs, 1988). While these cognitive or learning styles are not consistent enough to codify, they suggest distinct differences to be acknowledged in a learning environment.

Teachers and administrators should recognize that students bring a variety of learning, cognitive, and motivational styles to the classroom, and that while certain characteristics are associated with specific ethnic and social-class groups, these characteristics are distributed throughout the total student population. This means that teachers should use a variety of teaching styles and content that will address the needs of diverse students. Concepts should be taught, when possible, through different strategies so that students who are relational in their learning styles, as well as those who are analytic will have an equal opportunity to learn.

The Significance of this Review

The purpose of this research was to review the literature on ethnic/minority learning modalities and cognitive styles in an attempt to draw conclusions from the individual findings to develop a cross-cultural frame of reference to support more effective learning situations for <u>all</u> students, regardless of race, ethnicity, gender, language, SES, and family structure. Grant and Sleeter (1986) have presented the same argument in their review of multicultural education in this country.

Initially, some points need to be raised about the body of accumulating research. Of the nearly one hundred studies involving American Indians/Native Americans reported in this review, nearly one-third were based on studies of the Navajo people, "Dine". While it is obvious that the size of the Navajo Nation warrants this emphasis, the research findings themselves become skewed toward generalizations that are not truly applicable to all American Indian people. The differences disclosed in these research findings will perhaps do much to finally dispel the myth that the native people of North America are all the same, a stereotype similarly being confronted by those involved with peoples of Central and South America:

> Mexican Americans, mainland Puerto Ricans, Americans of Cuban descent, Americans of South American origin, as well as the recent immigrants from troubled Central American nations are distinct populations. They differ in demography and history, face different issues in schools, and should, therefore, be understood as such (Suarez-Orozco, 1987, p. 287).

The authors echo Suarez-Orozco's (1987) conclusion: "We need more comprehensive comparative studies exploring the different <u>kinds</u> of school problems facing different kinds of

minority populations" (p. 298). A comparison of the research reveals the differences between peoples grouped under the same minority heading. The stereotype that has been promulgated against Native Americans for so long has now been visited upon Central Americans and South Americans as well. Diversity within ethnic groups has received insufficient attention.

The review is nearly barren of research on more recent immigrant peoples (see "Vietnamese-Americans," Anderson, 1988; "Central Americans," Ogbu, 1987) even though Suarez-Orozco (1987) carefully presented the reasons for exploring the issues facing America's Hispanic immigrants from Central America.

Lack of knowledge about and understanding of different ethnic groups' learning modalities, cognitive styles, and cultural hertiage is being addressed by such programs as David Leonard's Cal Poly Multicultural Teacher Education Project and the research of Gloria Ladson-Billings (1989). The information needs to be presented to educators to avert the perpetration of Euro-centric views and interpretations.

One conclusion, clearly recommended by the findings, is that many minority students think holistically, thereby benefitting from whole language approaches to literacy. Strengthening this is the finding that many students of non-western heritage have developed imagery coding over semantics coding. One issue this should clearly impact on is the decision to employ whole language, literature-based reading, or basal readers in the curriculum.

The simultaneous/sequential research findings reveal a serious mismatch between learning styles of Native American students, African-American students, low-income white students and the usual teaching style of beginning reading. Many reading programs emphasize phonetics and the sounding-out approach; the strength of many of these students seems to be in simultaneous processing, suggesting whole language and sight-word vocabulary building.

The traditional utilitarian approach of American schools (Cuban, 1984; Illich, 1972; Freire, 1970, 1973; Jackson, 1968) has been repeatedly questioned by critical theorists and reform movements beyond those dealing specifically with culture and the learning process. The traditional holistic approach to learning that pervades Native American culture conflicts with the utilitarian education commonly experienced in Euro-American schools.

Native cultures stress avoidance of competition, a high level of cooperation, and strong peer influence. Native American and Spanish cultures both include a tradition of loyalty to the peer group and an emphasis on interpersonal cooperation rather than competition. Students who hold these cultural values tend to view displays of knowledge in the classroom as one person gaining at the expense of others. Since approval from the peer group is more important to them than approval from the instructor, such students will refrain from voluntary classroom discussion. Class participation is incompatible with their

cultural values.

Culturally specific compatibilities contribute to educational effectiveness; cultural incompatibility is one credible explanation for school failure. Elements found effective for Native Hawaiian children are not culturally compatible or effective for Navajo children. The same is true for any cross-cultural experience.

One of the reasons proposed for Anglo children's academic success is their greater tolerance for monotony; affective stimulation and vivacity are necessary for the Black child to be motivated to achieve in academics. Schools do not support the natural energy level of Black children who need an active environment for successful learning. Black children elicit more punishment and are labeled hyperactive more frequently because of their high motoric activity.

The Black home environment provides an abundance of stimulation, intensity, and variation through high noise levels and large numbers of people; analyzed as over-stimulation and conceptual deafness by some social scientists, Boykin (1978) proposed greater psychological and behavioral verve in Black children as a result. Rapport with the teachers in educational settings seems to be strongly related to academic performance for Black students.

Research further indicates that many at-risk students have not been taught with strategies, methods, materials that facilitate their learning style preferences and strengths. Mismatching students' learning styles with instruction results in their feeling anxious and even physically ill; the cerebrum "downshifts" during anxiety. When learning styles have been matched to appropriate instructional approaches, teachers have reported sharp decreases in stress.

The differences between children who function with relational and analytical styles is so great that children whose cognitive organization is relational are unlikely to be rewarded with grades regardless of their native ability, extent of learning, or experiences; children who live in more fluid or "shared-function" primary groups are more likely to exhibit the relational cognitive style.

Educational designs which select one body of information to be presented to all students at a set time and at some forced rate cannot possibly accommodate all learners. The only valid school reform is that which considers students' varied differences and strengths. Research indicates that many at-risk students have not been taught with strategies, methods, materials that accommodate their learning style preference and strengths.

A further implication of the review of research, and perhaps the most significant finding, is the support for a restructuring of the environment to better meet the needs of <u>all</u> students. Traditional American education has worked only slightly better for Anglo students of European descent than it has worked for minority students. Social class and ethnic group affiliation, by birth or by choice, are structures as predominant as "race"--a

ubiquitous terms, at best--in producing life-styles and development. A person's behavorial style is usually a cultural frame-work for how that person views the world; successful people integrate different styles.

The research suggests that even beyond race, ethnic group and social class the person's everyday life experiences impact significantly on cognitive development. The implication is that even for teachers of supposed homogeneous groups of students, each student must be viewed as the ever changing product of a unique culture. Recognizing that each student "hears a different drummer" is the first challenge; encouraging students to "step to the music" will maximize learning for all students--by far education's greatest challenge.

References

Abkar, N. (1975, October). Address before the Black Child Development Institute Annual Meeting, San Francisco, California.

Albas, D. C., McCluskey, K. W., & Albas, C. A. (1976). Perception of emotional content of speech: A comparison of two Canadian groups. Journal of Cross-Cultural Psychology, 7(4), 481-490.

Albers, P. C., & James, W. R. (1986). On the dialects of ethnicity: To be or not to be Santee (Sioux). Journal of Ethnic Studies, 14 (1), 1-27.

Allen, B. S., & Merrill, M. D. (1985). System-assigned strategies and CBI. Journal of Educational Computing Research, 1(1), 3-21.

Allport, G., & Pettigrew, T. (1957). Cultural influences on the perception of movement: The trapezoidal illusion among Zulus. Journal of Abnormal Psychology, (July).

Amodeo, L. B., & Brown, D. (1986). Students from Mexico in U.S. Schools. Educational Horizons, 64(4), 192-196.

Anderson, J. A. (1988). Cognitive styles and multicultural populations. In Duhon, R. M. (Chairperson Multicultural SIG), Promise and progress of the multicultural education efforts in the past two decades (pp. 11-40). Prepared for publication by the Association of Teacher Educators.

Anhelm, F. A. (1974). A comparative study of preferences of Anglo American and Indian children for particular visual qualities. Dissertation Abstracts International, 34(10A), 6346.

Annis, R. D., & Frost, B. (1973). Human visual ecology and orientation anisotropies in acuity. Science, 182, 729-731.

Appleton, N. (1983). Cultural Pluralism in Education. New York: Longman, Inc.

Au, K. H. (1980). Participant structure in a reading lesson with Hawaiian children. The Reading Teacher, 32(6), 677-679.

Au, K. H., & Jordan C. (1981). Teaching reading to Hawaiian children: Finding a culturally appropriate solution. In Trueba, H. H., Guthrie, G. P., & Au, K. H. (Eds.) Culture in the bilingual classroom: Studies in classroom ethnography (pp. 139-152). Rowley, Massachusettes: Newberry House.

Backman, M. E. (1972). Patterns of mental abilities: Ethnic, socioeconomic, and sex differences. American Educational Research Journal, 9, 1-12.

Baldwin, J. A. (1980). Psychological aspects of European cosmology in American society. Western Journal of Black Studies, 9(4).

Banks, J. A. (1984). Teaching strategies for ethnic studies (3rd ed.). Boston: Allyn and Bacon, Inc. (4th ed., 1987).

Banks, J. A. (1970). Teaching the Black experience: Methods and materials. Belmont, California: Fearon Publishers.

Banks, J. A. (Ed.). (1981). Education in the 80's: Multiethnic Education. Washington, D. C.: National Education Association.

Banks, J. A. (1988). Ethnicity, class, cognitive, and motivational styles: Research and teaching implications. Journal of Negro Education, 57(4), 452-466.

Bass, W. P., & Burger, H. C. (1967-68). American Indian and educational laboratories. In Higher Education. Hearings before the Special Subcommittee on Indian Education of the Committee on Labor and Public Welfare, Part I.

Battle, E. S., & Rotter, J. B. (1963). Children's feelings of personal control as related to social class and ethnic group. Journal of Personality, 31, 482-490.

Beaulieu, D. L. (1974). An analysis of differences in the perception of information needs among American Indian students in two selected Indian reservation communities. Dissertation Abstracts International, 34(11-A), 6936.

Becktell, M. (1986). The adult Navajo learner: Learning styles and corresponding teaching strategies. Unpublished manuscript.

Berry, J. W. (1976). Human ecology and cognitive style. New York: Sage-Halsted.

Berry, J. W. (1980). Ecological analyses for cross-cultural psychology. Studies in Cross-Cultural Psychology, 2, 157 189.

Berry, J. W. (1981). Research in multicultural societies: Implications of cross-cultural methods Journal of Cross-Cultural Psychology, 10, 415-434.

Bird, L. (1984, September). Tribal education concerns. Testimony presented at the public hearing for the State of New Mexico on Native American Higher Education, University of New Mexico, Albuquerque, New Mexico.

Boissevain, J., & Grotenberg, H. (1986). Culture, structure, and ethnic enterprise: The Surinamese of Amsterdam. Ethnic and Racial Studies, 9, 1-23.

Borkowski, J. G., et al. (1985). On multiple determinants of racial differences in intelligence: A reply to Jensen. Intelligence, 9(1), 41-49.

Bowd, A. D. (1971). Mechanical Aptitude and environment. Unpublished dissertation, University of Calgary.

Boyer, J. B. (1989). Celebrating the challenge of educational equity and ethnic diversity in the diversity in the curriculum of teacher education. Paper presented at the 69th Annual Meeting of the Association of Teacher Educators, St. Louis, Missouri, February 18-22.

Boykin, A. W. (1978). Psychological/Behavioral verve in academic/task performance: Three theoretical considerations Negro Education, 343-354.

Bradley, C. (1984). Issues in mathematics education for Native Americans and directions for research. Journal for Research in Mathematics Education, 15(2), 96-106.

Bradshaw, J. L., & Nettleton, N. C. (1981). The nature of hemispheric specialization in man. The Behavioral and Brain Sciences, 4, 51-91.

Brady, M. L. (1984). Understanding the minority child in the American educational system. Education, 105(1), 21-33.

Brazelton, T. B., Young, G. G., & Bullowa, M. (1971). Inception and resolution of early developmental pathology: A case history. Journal of the American Academy of Child Psychiatry, 10(1), 124-135.

Brenner, M. (1985). The practice of arithmetic in Liberian schools. Anthropology and Education Quarterly, 16(3), 177-186.

Brito, S. J. (1984). American Indian political participation: From melting pot to cultural pluralism. American Indian Culture and Research Journal, 7(4), 51-68.

Brown, G. H , Rosen, N. L., Hill, S. T., & Olivas. (1980). The condition of education for Hispanic Americans. Washington,

D. C.: United States Department of Education, National Center for Education Statistics.

Brown, M. (1986). Calculus by the dozen: A retention program for undergraduate minority students in mathematics-based majors. Paper presented at the Second Annual Conference on Black Student Retention, Atlanta, Georgia, November 1986.

Bruner, J. S., Olver, R. R., & Greenfield, P. M. (1966). Studies in cognitive growth. New York: John Wiley.

Bryant, H. W. (1986). An investigation into the effectiveness of two strategy training approaches on the reading achievement of grade one native Indian students. Unpublished dissertation, University of British Columbia, Vancouver.

Buffer, J. J., Jr. (1985). A multidisciplinary approach to human development and learning. Theory Into Practice, 24(2), 145-148.

Burnes, K. (1970). Patterns of WISC scores for children of two socioeconomic classes and races. Child Development, 41, 493-499.

Callahan, V. A. (1969). Mathematics in the Mayan, Aztec, and Inca cultures. Unpublished master's thesis, University of Maine, Orono.

Carbo, M. (1987). Matching reading styles: Correcting ineffective instruction. Educational Leadership, 45(2), 55-62.

Carbo, M. (1988). The evidence supporting reading styles: A response to Stahl. Phi Delta Kappan, 323-327.

Carbo, M., Dunn., R., & Dunn, K. (1986). Teaching students to read through their individual learning styles. Reston, VA: Reston Publishing Co.

Carbo, M., & Hodges, H. (1988). Learning styles strategies can help students at risk. Teaching Exceptional Children, 20(4), 55-58.

Cardell, G., Cross, W. C., & Lutz, W. J. (1978). Extending counselor influence into the classroom. Journal of American Indian Education, 17(2), 7-12.

Cattey, M. (1980). Cultural differences in processing information. American Indian Culture and Research Journal, 7(4), 51-68. (Incomplete bibliography reported by Cattey.)

Cazden, C. B., & John, V. P. (1971). Learning in American Indian children. In Wax, M. L., Diamond, S., & Gearing, F. O. (Eds.) Anthropological perspectives on education (pp. 252- 271). New York: Basic Books.

Cazden, C. B. (1982). Four comments. In Gilmore, P., & Glatthkorn, A. (Eds.), Children In and Out of School. Washington, D.C.: Center for Applied Linguistics.

Cheek, H. N. (1984). Increasing the participation of Native Americans in mathematics. Journal for Research in Mathematics Education, 15(2), 107-113.

Chilcott, J. H. (1985). Yaqui world view and the school: Conflict and accomodation. Journal of American Indian Education, 24(1), 21-31.

Chrisjohn, R. D., & Peters, M. (1986). The right-brained Indian: Fact or fiction? Journal of American Indian Education, 25(2), 1-7.

Closs, M. P. (1977). A survey of mathematics development in the new world (Report 410-77-0222). Ottawa, Canada: University of Ottawa.

Cohen, R. A. (1969). Conceptual styles, cultural conflict, and nonverbal tests of intelligence. American Anthropologist, 71, 828-856.

Cohen, R. A. (1971). The influence of conceptual rule-sets on measures of learning ability. In Race and intelligence. Washington, D.C.: American Anthropological Association.

Cole, M., Gay, J., Glick, J., & Sharp, D. W. (1971). The cultural context of thinking & learning. New York: Basic Books.

Cole, M., & Scribner, S. (1974). Culture and thought: A psychological introduction. New York: John Wiley.

Coleman, J. S. (1966). Equality of educational opportunity. Washington, D.C.: United States Government Printing Office.

Colliers. (1967). In Cattey, M. Cultural differences in processing information. American Indian Culture and Research Journal, 7(4).

Coombs. (1958). In Cattey, M. Cultural differences in processing information. American Indian Culture and Research Journal, 7(4).

Coombs., & Coleman. Cited by Cattey, M. (1980). Incomplete

Cooper, G. (1980). Different ways of thinking. Minority Education, (December).

Cordasco, F. (1983). Bilingual education: Overview and inventory. Educational Forum, 47, 321-324.

Cosway P., & Rodney, C. (1987). 'Multicultural fiction' in a suburban school. Multicultural Teaching, 5(2), 19-23.

Cox, B. G., & Ramirez, M. (1981). Cognitive styles: Implications for multiethnic education. In Banks, J. A. (Ed.) Education in the 80's: Multiethnic education (61-71). Washington, D. C.: National Education Association.

Crowell, D. (1977). Results of the minimum objective system, 1975-76. Technical Report No. 77. Honolulu: Kamehameha Schools, Kamehameha Elementary Education Program.

Cuban, L. (1984). How teachers taught: Constancy and change in American classrooms, 1890-1980. New York: Longman.

Cullanine, D. (1985). A cognitive style study of native Indian children. Unpublished thesis, University of British Columbia, Vancouver.

D'Amato, J. (1986). "We cool, tha's why": A study of personhood and place in a class of Hawaiian second graders. Doctoral disseration, University of Hawaii.

D'Amato, J. (1988). The belly of the beast: On cultural differences, castelike status, and the politics of school. Anthropology and Education Quarterly, 18(4), 357-360.

Das, J. P., Kirby, J., & Jarman, R. F. (1979). Simultaneous and successive cognitive processes. New York: Academic Press.

Das, J. P., Kirby, J., & Jarman, R. F. (1982). Simultaneous and successive synthesis: An alternative model for cognitive abilities. Psychological Bulletin, 82(1), 87-103.

Das, J. P., Manos, J., & Kanungo, R. N. (1975). Performance of Canadian native, black and white children on some cognitive and personality tests. Alberta Journal of Educational Research, 2(3), 183-195.

Dasen, P. R. (1975). Concrete operational development in three cultures. Journal of Cross-Cultural Psychology, 6(2), 156-172.

Davidman, L. (1981). Learning style: The myth, the panacea, the wisdom. Phi Delta Kappan, 62(3), 641-645.

Davidman, L. (1988). Multicultural education: New definitions and strategies for teacher education. In Promise and progress of the multicultural education efforts in the past two decades. Report prepared by the Association of Teacher Educators' multicultural Special Interest Group.

Davis, C., Haub, C., & Willette, J. (1983). Trouble in our backyard: Central America and the United States in the eighties. New York: Pantheon Books.

Davis, T., & Pyatowsky, A. (1976). Bicognitive education: A new future for the Indian child. Journal of American Indian Education, 15(3), 14-20.

Dawson, J. (1988). "If my children are proud": Native Education and the problem of self-esteem. Canadian Journal of Native Education, 15, 43-50.

Della Valle, J., Dunn, K., Dunn, R., Geisert, G., Sinatra, R., & Zenhausern, R. (1986). The effects of matching and mismatching students' mobility preferences on recognition and memory tasks. Journal of Educational Research, 79, 267-272.

Dennis, W. (1942). The performance of Hopi children on the Goodenough Draw a Man Test. Journal of Comparative Psychology, 34(3).

Dennis, W. (1943). Animism and related tendencies in Hopi children. Journal of Abnormal and Social Psychology, 38, 21-36.

Dittman. (1970). In Cattey, M., Cultural differences in processing information. American Indian Culture and Research Journal, 7(4).

Dixon, V. J., & Foster, B. G. (1971). Beyond black or white. Boston: Little, Brown.

Dregoski, J. B., and Serpell, R. (1974). Performance on a sorting task with various modes of representation: A cross cultural experiment. In Cole, M., Culture and Thought (p. 115). New York: John Wiley.

Dumont, R. V., Jr. (1972). Learning English and how to be silent: Studies in Sioux and Cherokee classrooms. In Cazden, C., John, V., & Hymes, D. (Eds.), Functions of Language in the Classroom. New York: Teachers College Press.

Dunn, R. (1984). Learning style: State of the science. Theory into Practice, 20(1), 10-19.

Dunn, R. (1988). Teaching students through their perceptual strengths or preferences. Journal of Reading, 31, 304-309.

Dunn, R., DeBello, T., Brennan, P., & Murrain, P. (1981). Learning style researchers define differences differently. Educational Leadership, 38, 372-375.

Dunn, R., & Dunn, K. (1978). Teaching students through their individual learning styles: A practical approach. Reston, VA: Rreston Publishing Company.

Dunn, R. & Griggs, S. A. (1988). Learning styles: Quiet revolution in American Secondary Schools. Reston, Virginia: National Association of Secondary School Principals.

Echohawk, M., & Parsons, O. A. (1972). Leadership versus behavioral problems and belief in personal control among American Indian youth. Journal of Social Psychology, 102, 47-54.

Erickson, F. D. (1982). Taught cognitive learning in its immediate environments: A neglected topic in the anthropology of education. Anthropology and Education Quarterly, 13(2), 149-180.

Erickson, F., & Mohatt, G. (1982). Cultural organization of participation structures in two classrooms of Indian students. Doing the Ethnography of schooling. New York: Holt, Rhinehart and Winston.

Esen, A. (1973). The car syndrome: A resource for counseling in Africa. Journal of Negro Education, 42(2), 205-211.

Estrada, L. J., & La Belle T. J. (1979). Mexican education. In Ingas, E., & Corisini, R. J. Comparative educational systems (302-303). Itasca, IL: Peacock Publishers.

Feldman., & Dittman. (1970). Cited in Cattey, M. (1980). Incomplete citation.

Ford Foundation. (1982). Minorities and mathematics. New York.

Fordham, S., & Ogbu, J. (1986). Black students' school success: Coping with the "Burden of Acting White." Urban Review, 18(3), 176-206.

Foreman, L. D. (1987). Curricular choice in the age of self-determination. Journal of American Indian Education, 26(2), 1-6.

Freedman, D. G. (1979). Ethnic differences in babies. Human Nature, (January). (Article expanded from Human

Sociobiology, Free Press.)

Freire, P. (1970). Pedagogy of the Oppressed, M. B. Ramos, Trans. New York: Seabury.

Freire, P. (1973). Education for critical consciousness. New York: Seabury.

Gagne, R. M., & Gephart, W. (1968). Learning research and school subjects. Itasen, Illinois: Peacock.

Gallimore, R., Boggs, J., & Jordan, C. (1974). Culture, behavior and education: A study of Hawaiian Americans. Beverly Hills: Sage.

Gallimore, R., Boggs, J., & Jordan, C. (1982). Analysis of reading achievemnet test results for the Kamehameha Early Education Project: 1972-1979. Technical Repcrt No. 95. Honolulu: Kamehameha Schools.

Garcia, R. L. (1982). Teaching in a pluralistic society. New York: Harper & Row.

Gardner, R. (1959). Cognitive control: A study of individual consistencies in cognitive behavior. Psychological Issues. 4, 22-30.

Gardner, H. (1983). Frames of mind: The theory of multiple intelligence. In Seven ways of knowing, not one. Education Week (1988, January 27).

Garner, C. W., & Cole E. G. (1986). The achievement of students in low-SES settings: An investigation between locus of control and field dependence. Urban Education, 21(2), 189-206.

Gay, J., & Cole, M. (1967). The new mathematics and an old culture: A study of learning among the Kpelle of Liberia. New York: Holt, Rinehart and Winston.

Gibson, M. A. (1976). Approaches to multicultural education in the United States: Some concepts and assumptions. Anthropology and Education Quarterly, 6(4), 7-18.

Gibson, M. A. (1982). Reputation and respectability: How competing cultural systems affect students' performance in school. Anthropology and Education Quarterly, 13(1), 3-27.

Gibson, M. A. (1983). Ethnicity and schooling: West Indian immigrants in the United States Virgin Islands. Ethnic Group, 5, 173-198.

Gibson, M. A. (1988). The school performance of immigrant minorities: A comparative view. Anthropology & Education Quarterly, 18(4), 262-275.

Gill, S. D. (1982). Native American tradition. Belmont, CA: Wadsworth.

Gitter, A. G., Black, H., & Mostofsky, D. I. (1972). Race and sex in perception of emotion. Journal of Social Issues, 28, 63-78.

Gold, M. J., Grant, C. A., & Rivlin, H. N. (1977). Praise of diversity: A resource book for multicultural education. Washington, D.C.: Teachers Corps, Association of Teacher Educators.

Goldman, R., & Sanders, J. (1969). Cultural factors and hearing. Exceptional Children, 35, 489-490.

Grant, C. A., & Sleeter, C. E. (1986). Race, class, and gender in education research: An argument for integrative analysis. Review of Educational Research, 56, 195-211.

Granzberg, G. (1976). Delay of gratification and abstract ability in three societies. The Journal of Social Psychology, 100, 181-187.

Green, K. (1985). Cognitive style: A review of the literature. Technical Report. Johnson O'Connor Research Foundation. Chicago, Illinois.

Green, R. (1977). American Indian mathematics education: A report. Washington, D.C.: American Association for the Advancement of Science.

Green, R. (1978). Math avoidance: A barrier to American Indian science education and science careers. Bureau of Indian Affairs Education Research Bulletin, 6(3), 1-8. (ERIC Document Reproduction Service No. ED 170 084).

Greenbaum, F., & Greenbaum, S. (1983). Cultural differences, nonverbal regulation, and classroom interaction: Sociolinguistic interference in American Indian education. Peabody Journal of Education, 61(1).

Gridley, M. E. (1974). American Indian women. New York: Hawthorn.

Gue, L. R. (1971). Value orientations in an Indian community. Alberta Journal of Educational Research, 17(1), 19-31.

Guild, P. B., & Garger, S. (1985). Marching to different drummers. Alexandria, VA: ASCD.

Gurin, P., Gurin, G., Lao, R. C., & Beattie, M. (1969). Internal-external control in the motivational dynamics of Negro youth. Journal of Social Issues, 25(3), 29-53.

Guthrie, G. P., & Hall, W. S. (1981). Introduction In Trueba, H., Guthrie, G., & Hu-Pui Au, K. (Eds.), Cuture and the bilingual classroom: Studies in classroom ethnography. Rowley, MA: Newbury House Publishers.

Guttentag, M. (1972). Negro-White differences in children's movement. Perceptual and Motor Skills, 35, 435-436.

Guttentag, M., & Ross, S. (1972). Movement responses in simple concept learning. American Journal of Orthopsychiatry, 42, 657-665.

Haberman, M. (1989). More minority teachers. Kappan, 70(10), 771-776.

Hale, J. (1981). Black children: Their roots, culture and learning styles. Young Children, 36(2), 37-50.

Hale-Benson, J. (1986). Black children: Their roots, culture, and learning styles. (rev. ed.) Baltimore: The John Hopkins University Press.

Halpin, G., Halpin, G., & Whiddon, T. (1980). The relationship of perceived parental behaviors to locus of control and self-esteem among American Indian and white children. Journal of Social Psychology, 111(2), 189-195.

Hamilton, S. (1983). Reading styles: An experiment with sixth grade, poor readers. Report prepared for the Norton, Ohio, Public Schools.

Hart, L. (1983). Programs, patterns, and down-shifting in learning to read. The Reading Teacher, 37(1), 5-11.

Havighurst, R. (1957). Education among American Indians: Individual and cultural aspects. Annals of the American Academy of Political and Social Science, 311.

Havighurst, R. (1976). The relative importance of social class and ethnicity in human development. Human Development, 19, 56-64.

Hilliard, A. (1976). Alternatives to IQ testing: An approach to the identification of gifted minority children. Final report to the California State Department of Education.

Hodges, H. (1982). Madison prep: Alternatives through learning styles. In Keefe, J. (Ed.), Learning styles and brain behavior (pp. 28-32). Reston, VA: National Association of Secondary School Principals.

Hodges, H. (1985). An analysis of the relationships among preferences for a formal/informal design, one element of learning style, academic achievement, and attitudes of seventh and eighth grade students in remedial mathematics classes in a New York City alternative junior high school. Doctoral dissertation, St. John's University, New York.

Hodges, H. (1987). I know they can learn because I've taught them. Educational Leadership, 44(6), 3.

Holt, J. (1964). How children fail. New York: Dell.

Illich, I. (1972). De-schooling society. New York: Harper & Row.

Jackson, P. W. (1968). Life in classrooms. New York: Holt.

Jencks, C., Smith, M., Acland, H., Bane M. J., Cohen, D., Gintis, H., Heyns, B., & Michelson, S. (1972). Inequality: A reassessment of the effect of family and schooling in America. New York: Basic Books.

Jessor, R., Graves, T. D., Hanson, R. C., & Jessor, S. L. (1968). Society, personality, and deviant behavior. New York: Holt, Rhinehart & Winston.

John, V. (1972). Styles of learning--styles of teaching: Reflections on the education of Navajo children. In Cazden, D., John, V., & Hymes, D. (Eds.). Functions of language in the classroom. New York: Teachers College Press.

Johnson, S. W., & Suetopka-Duerre, R. N. (1984). Contributory factors in Alaska native educational success: A research strategy. Educational Research Quarterly, 8(4), 44-51.

Jones, E. E., & Zoppel, C. L. (1979). Personality differences among Blacks in Jamaica and the United States. Journal of Cross-Cultural Psychology, 10, 435-456.

Jordan, C. (1977). Maternal teaching, peer teaching and school adaptation in an urban Hawaiian population. Technical Report No. 67. Honolulu: Kamehameha Schools.

Jordan, C. (1984). Cultural compatibility and the education of ethnic minority children. Educational Research Quarterly, 8(4), 59-71.

Jordan, C. (1985). Translating culture: From ethnographic information to educational program. Anthropology and Education Quarterly, 16(2), 105-123.

Jordan, C., & Tharp, R. G. (1984, November). Level of analysis and the specification of sources of academic underachievement for minority cultural groups: Evidence from the Hawaiian case. Honolulu: Kamehameha Schools. Revised version of paper presented at the Annual meeting of the American Anthropological Association.

Jordan, T. (1978). Learning notes, Fall Quarter. Cleveland: Cleveland State University.

Kagan, J. (1966). Reflection-impulsivity: The generality and dynamics of conceptual tempo. Journal of Abnormal Psychology, 71, 17-24.

Kagan, S. (1977). Social motives and behaviors of Mexican American and Anglo American children. In Martinez, J. L. (Ed.) Chicano psychology. New York: Academic Press.

Kagan S., & Buriel, R. (1977). Field dependence-independence and Mexican-American culture and education. In Martinez, J. (Ed.) Chicano psychology (pp. 279-328). New York: Academic Press.

Kagan, S., & Knight, G. P. (1981). Social motives among Anglo American and Mexican American children: Experimental and projective measures. Journal of Research in Personality, 15, 93-106.

Kagan, S., & Madsen, M. C. (1971). Cooperation and competition of Mexican, Mexican-American and Anglo-American children of two ages under four instruction sets. Developmental Psychology, 5, 32-39.

Kamii, C. K., & Radin, N. J. (1967). Class differences in socialization practices of Negro mothers. Journal of Marriage and the Family, 29, 302-310; reprinted in Staples, R. (Ed.) The Black family: Essays and studies (235-247). Belmont, CA: Wadsworth Publishing Co.

Karlebach, D. G. (1986). A cognitive framework for deriving and interpreting learning style differences among a group of intermediate grade native and non-native pupils. Unpublished doctoral dissertation, University of British Columbia, Vancouver.

Kaufman, A. S., & Kaufman, N. L. (1983). Kaufman Assessment Battery for Children, Interpretive Manual. Circle Press, Minnesota: American Guidance Service.

Kaulbach, B. (1984). Styles of learning among native children: A review of the research. Canadian Journal of Native Education, 11(3), 27-37.

Keefe, J. W. (1979). Learning style: An overview. In Student learning styles: Diagnosing and prescribing programs (Keefe, J. Ed.) (pp. 1-17). Reston, VA: National Association of Secondary School Principals.

Keefe, J. W. (Ed.). (1982). Student learning styles and brain behavior: Programs, instrumentation, research. Reston, VA: National Association of Secondary School Principals.

Keefe, J. W. (1985). Assessment of Learning style variables: The NASSP task force model. Theory Into Practice, 24(2), 138-144.

Keefe, J. W., & Languis, M. L. (1983, August). Operational definitions. Paper presented to the NASSP Learning Styles Task Force, Reston, VA.

Killbride, P., & Robbins, M. (1968). Linear perspective, pictorial depth perception and education among the Baganda. Perceptual and Motor Skills, 21(2), 161.

Kirby, J. R. (1984). Cognitive strategies and educational performance. New York: Academic Press.

Kirkness, V. J. (1981). The education of Canadian Indian children. Child Welfare, 60(7), 447-455.

Klein, T. (1981). Results of the reading program. Educational Perspectives, 20(1), 8-10.

Kleinfeld, J. S. (1972). Effective teachers of Indian and Eskimo high school students. Fairbanks, Alaska: Center for Northern Educational Research.

Kleinfeld, J. S. (1973). Intellectual strengths in culturally different groups: An Eskimo illustration. Review of Educational Research, 43(3), 341-359.

Kleinfeld, J. S. (1975). Effective teachers of Eskimo and Indian students. School Review, 83, 301-344.

Kleinfeld, J. S. (1979). Eskimo School on the Andreafsky: A study of effective bicultural education. New York: Praeger.

Knight, G. P., & Kagan, S. (1982). Siblings, birth order, and cooperative-competitive social behavior: A comparison of Anglo-American and Mexican-American children. Journal of Cross-Cultural Psychology, 13(2), 239-249.

Kochman, T. (1982). Cross-cultural studies in cognition and mathematics. New York: Academic Press.

Kohr, R. L., Coldiron, J. R., Skiffington, E. W., Masters, J. R., & Blust, R. S. (1988). The influence of race, class, and gender on self-esteem for fifth, eighth, and eleventh grade students in Pennsylvania schools. Journal of Negro Education, 57(4), 467-481.

Kroon, D. (1985). An experimental investigation of the effects on academic achievement and the resultant administrative implications of instruction congruent and incongruent with secondary, industrial arts students' learning style perseptual preferences. Doctoral dissertation, St. Johns' University, New York.

Krywaniuk, L. L. (1974). Patterns of cognitive abilities of high and low achieving school children. Unpublished doctoral dissertation, University of Alberta, Edmonton, Alberta.

Kuipers. Cited in Cattey, M. (1980). Incomplete citation.

Laboratory of Comparative Human Cognition. (1986). Contributions of cross-cultural research to educational practice. American Psychologist, 41(1), 1049-1058.

Ladson-Billings, G. (1989). Like lightening in a bottle: Attempting to capture the pedagogical excellence of successful teachers of Black students. Paper presented at the Tenth Annual Ethnography in Education Research Forum, February 24-25, 1989, University of Pennsylvania, Philadelphia, Pennsylvania.

Lancy, D. F. (1983). Cross-cultural studies in cognition and mathematics. New York: Academic Press.

Laosa, L. (1977). Multicultural education: How psychology can contribute. Journal of Teacher Education, 28, 26-30.

LaShell, L. (1986). An analysis of the effects of reading methods on reading achievement and locus of control when individual reading style is matched for learning disabled students. Doctoral dissertation, Fielding University.

LeBrasseur, M. M., & Freark, E. S. (1982). Touch a child--they are my people: Ways to teach American Indian children. Journal of American Indian Education, 21(3), 6-12.

Leap, W. L. (1982). Semilingualism as a form of linguistic proficiency. In St. Clair, R., & Leap, W. (Eds.), Language renewal among American Indian tribes: Issues, problems and

prospects (149-159). Rosslyn, VA: National Clearinghouse for Bilingual Education.

Leap, W. L., McNett, C., Jr., Cantor, J., Baker, R., Laylin, L., & Renker, A. (1982). Dimensions of math avoidance among American Indian elementary school students, (Final Report). Washington, D. C.: The American University.

Lee, M. W. (1986). The match: Learning styles of black children and microcomputer programming. Journal of Negro Education, 55(1), 78-89.

Lee-Jones, C. (1986). Images, attitudes and racism: A general studies module. Multi-Ethnic Education Review, 5(2), 42-44.

Lefcourt, H. M. (1966). Internal versus external control of reinforcement: A review. Psychological Bulletin, 65, 206-220.

Lefkowitz, B. (1985). Renegotiating society's contract with public schools: The national commission on secondary education for Hispanics and the National Board of Inquiry into schools. Carnegie Quarterly, 29(4), 2-11.

Lesser, G. S., Fifer, G., & Clark, D. H. (1965). Mental abilities of children from different social-class and cultural groups. Monographs of the Society for Research in Child Development, 30(4).

Lesser, G. S., Fifer, G., & Clark, D. H. (1967). Cited in Stodolosky, S. S., & Lesser, G. Learning patterns in the disadvantaged, Harvard Eductaional Review, 37, 546-593.

Lester, J. (1969). Look out Whitey! Black Powers gon' get your Mama! New York: Grove.

Letteri, C. A. (1982, September). Information processing model. Paper presented to the NASSP Learning Styles Task Force, Reston, VA.

Lewis, R. G., & Gingerich, W. (1980). Leadership characteristics: Views of Indian and non-Indian students. Social Casework: The Journal of Contemporary Social Work, (October), 494-497.

Light, I. (1984). Immigrant and ethnic enterprise in North America. Ethnic and Racial Studies, 4(20), 195-216.

Light, H. K., & Martin R. E. (1985). Guidance of American Indian children: Their heritage and some contemporary views. Journal of American Indian Education, 24, 42-46.

Llewellyn, K. N., & Hoebel, E. A. (1967). The Cheyenne way. Norman, OK: University of Oklahoma Press.

Loflin, M. D. (1984). Discovering cognitive abilities of native children. Educational Research Quarterly, 8(4), 52-58.

Luetgert, M. J. (1977). The ethnic student: Academic and social problems. Adolescence, 12(47), 321-327.

Lynch, P. (1981). An analysis of the relationships among academic achievement, attendance, and the learning style time preferences of eleventh- and twelfth-grade students identified as initial or chronic truants in a suburban New York school district. Doctoral dissertation, St. John's University, New York.

Mc Arthur, R. S. (1968). Ecology, culture and cognitive development: Canadian native youth. In Driedger, L. (Ed.), The Canadian ethnic mosaic. Toronto: McClelland and Stewart.

Mahan, J. M. (1984). Major concerns of Anglo student teachers serving in Native American communities. Journal of American Indian Education, 23.

Mahan, J. M., & Henderson, J. N. C. (1984). A Navajo educational view: Teachers and administrators need more cultural knowledge. Journal of Educational Equity and Leadership, 4(1), 27-38.

Marans, A., & Lourie, R. (1967). Hypotheses regarding the effects of childrearing patterns on the disadvantaged child. In Hellmuth, J. (Ed.) Disadvantaged Child. Seattle: Special Child Publications.

Marashio, P. (1982). "Enlighten my mind* . . ." Examining the learning process through Native Americans' Ways. Journal of American Indian Education, 21(2), 2-9.

Martin, J. C. (1977). Cognitive style and its relationship to paired-associate and concept identification task performance of primary-aged school children. Dissertation Abstracts International, 37(9-A), 5705.

Masden, M. C. (1982). Animism and related tendencies in Hopi children. Journal of Cross-Cultural Psychology, 13(1), 117-124.

Matthews, B. (1973). Black cognitive process. Unpublished paper. Howard University.

Matute-Bianchi, M. E. (1986). Ethnic identities and patterns of school success and failure among Mexican-descent and

Japanese-American students in a California High School: An ethnographic analysis. American Journal of Education, 95(1), 233-255.

Mbiti, J. (1970). African religions and philosophies. Garden City, New York: Anchor Books, Doubleday.

MacArthur. (1973). Some ability patterns: Central Eskimos and Nsenga Africans. International Journal of Psychology, 8(4), 239-247.

McCartin, R., & Schill, W. J. (1977). An experiment with three modes of instruction for Indian elementary school children. Journal of American Indian Education, 17(1).

McClintock, E., Bayard, M. P., & McClintock, C. G. (1979). Socialization of prosocial orientations in the Mexican American family. Paper presented at the National Symposium on the Mexican American Child, University of California, Santa Barbara.

McDermott, L. C. (1980). Helping minority students succeed in science. JCST, (January).

McDermott, R. P. (1985). Research currents: Cultural-ecological influences on minority school learning. Language Arts, 62(8), 860-869.

McDermott, R. P. (1988) The explanation of minority school failure, again. Anthropology & Education Quarterly, 18(4), 361-364.

McNeil, K. (1968). Semantic space as an indicator of socialization. Journal of Educational Psychology, 59, 325-327.

McNeil, K., & Phillips, B. (1969). Scholastic nature of responses to the environment in selected subcultures. Journal of Educational Psychology, 60(2), 79-85.

McNeil, L. (1987). Talking about differences: Teaching to sameness. Journal of Curriculum Studies, 19(2), 105-122.

Messer, S. B. (1976). Reflection--impulsivity: A review. Psychological Bulletin, 83(6), 1026-1052.

Messick, S. (1969). The criterion problem in the evaluation of instruction. Princeton, NJ: Educational Testing Services. (Also in Wittrock, M., & Wiley, D. [Eds.]. [1970]. The evaluation of instruction: Issues and problems. New York: Holt, Rinehart & Winston.)

Messick, S. (1970). The criterion problem in the evaluation of instruction: Assessing possible, not just intended outcomes. In Wittrock, M. C., & Wiley, G. D. E. (Eds.), The evaluation of instruction: Issues and problems. New York: Holt.

Miller, A. G., & Thomas, R. (1972). Cooperation and competition among Blackfoot Indian and urban Canadian children. Child Development, 43, 1104-1110.

Moore, C. G. (1982). The Navajo culture and the learning of mathematics. Washington, D.C.: National Institute of Education. (ERIC Document Reproduction Service No. ED 214 708).

Moore, E. G. J. (1985). Ethnicity as a variable in child development. In Spencer, M. G., Brookins, G. K., & Allen, W. R. (Eds.) The social and affective development of Black children (pp. 101-115). Hillsdale, N. J.: Lawrence Erlbaum Associates.

More, A. J. (1984). Okanagan/Nicola Indian quality of education study. Penticton: Okanagan Indian Learning Institute.

More, A. J. (1987). Native Indian learning styles: A review for researchers and teachers. Journal of American Indian Education, 27(1) 17-29.

Morgan, H. (1976). Neonatal precocity and the Black experience. Negro Educational Review, 27, 129-134.

Munro, D. (1979). Locus of control attribution: Factors among blacks and whites in Africa. Journal of Cross-Cultural Psychology, 10, 157-172.

Newmeyer, J. A. (1970). Creativity and nonverbal communication in preadolescent White and Black children. Unpublished doctoral disertation. Harvard University.

Nieto, C. (1986). The California challenge: Preparing teachers for a growing Hispanic population. Action in Teacher Education, 7(1), 1-8.

Norton, L. S. (1975). Elementary school age children's perceptions of teacher's non-verbal behavior. Dissertation Abstracts International, 35(10-A), 6371.

Odell, S. J. (1979). Piagetian conservation in Navajos. Dissertation Abstracts International, 39(12-A), 7139-7140.

Ogbu, J. U. (1974). The next generation: An ethnography of education in an urban neighborhood. New York: Academic Press.

Ogbu, J. U. (1977). Racial stratification and education: The case of Stockton, California. ICRD Bulletin, 12(3), 1-26.

Ogbu, J. U. (1978). America's other castelike minorities: American Indians, Mexican Americans, and Puerto Ricans. Minority education and the caste system. New York: Academic Press.

Ogbu, J. U. (1982a). Cultural discontinuities and schooling. Anthropology and Education Quarterly, 13(4), 290-307.

Ogbu, J. U. (1982b). Equalization of educational opportunity and racial/ethnic inequality. In Altbach, P. G., Arnove, R. F., & Kelly, G. P. (Eds.) Comparative education (269-289). New York: Macmillan.

Ogbu, J. U. (1983). Minority status and schooling in pluralistic societies. Comparative Education Review, 27(2), 168-190.

Ogbu, J. U. (1985). Research currents: Cultural-ecological influences on minority school learning. Language Arts, 62(8), 860-869.

Ogbu, J. U. (1987). Frameworks. Variability in minority school performance: A problem in search of an explanation. Anthropology and Education Quarterly, 18(4), 312-334.

Ogbu, J. U., & Matute-Bianchi, M. (1986). Understanding sociocultural factors: Knowledge, identity, and school adjustment. In Beyond language: Social and cultural factors in schooling language minority students (pp. 73-142). Sacramento: Bilingual Education Office, California State Department of Education, Evaluation, Dissemination, and Assessment Center.

Oklahoma Department of Vocational and Technical Eduction. (1989). Summary Statistics: 1988-89 Final Dropout Report. (Planning Unit, Oklahoma State Department of Vocational and Technical Education and the Accreditation Section of the Oklahoma State Department of Education). Stillwater, Oklahoma.

Opler, M. (1946). Childhood and youth in Jicarrila Apache society. Los Angeles: The Southwest Museum.

Orasanu, J., Lee, C., & Scribner, S. (1979). The development of category organization and free recall: Ethnic and economic group comparisons. Child Development, 50, 1100-1109.

Ortiz, V. (1986). Reading activities and reading proficiency among Hispanic, Black, and White students. American Journal of Education, 95(1), 58-76.

Osborne, B. (1985). Research into Native North Americans' cognition: 1973-1982. Journal of American Indian Education, 24(3), 9-25.

Osborne, R. J., & Wittrock, M. C. (1983). Learning science: A generative process. Science Education, 67(4), 489-508.

Parsons, O. A., & Schneider, J. M. (1974). Locus of control in university students from Eastern and Western societies. Journal of Consulting and Clinical Psychology, 42, 456-461.

Pepper, F., & Henry, S. L. (1986). Social and cultural effects on Indian learning style: Classroom implications. Canadian Journal of Native Education, 13(1), 54-61.

Perney, V. H. (1976). Effects of race and sex on field dependence-independence in children. Perceptual and Motor Skills, 42, 975-980.

Perrin, J. (1984). An experimental investigation of the relationships among the learning style sociological preferences of gifted and nongifted primary children, selected instructional strategies, attitudes, and achievement in problem solving and rote memorization. Doctoral dissertation, St. John's University. New York.

Persi, J., & Brunatti, G. (1987). Cognitive measures and cognitive bias: A comparison of the performances of native and non-native low achievers. Canadian Journal of Native Education, 14(1), 15-18.

Philips, S. (1972). Participant structures and communicative competence. Warm Springs children in community and classroom. In Cazden, C., Hymes, D., & John, V. (Eds.), Functions of language in the classroom (370-394). New York: Teachers College Press.

Piestrup, A. (1973). Black dialect interference and accommodation of reading instruction in first grade. Monograph #4. Berkeley, CA: University of California, Language Behavior Research Laboratory.

Ramirez, M. (1973). Cognitive styles and cultural democracy in education of Mexican Americans. Social Science Quarterly, 53, 895-904.

Ramirez, M., & Castaneda, A. (1974). Cultural democracy, bicognitive development and education. New York: Academic.

Ramirez, M., Castaneda, A., & Herold, P. (1974). The relationship of acculturation to cognitive style among Mexican Americans. Journal of Cross-Cultural Psychology, 5, 212-219.

Ramirez, M., & Price-Williams, D. R. (1974). Cognitive styles of children of three ethnic groups in the United States. Journal of Cross-Cultural Psychology, 5, 212-219.

Reyes, L. H., & Stanic, G. M. (1985, April). A review of the literature on Blacks and mathematics. Research/Technical Report 143. Paper presented at the Annual Meeting of the American Educational Research Association.

Reynolds, C. H. (1976). Correlational findings, educational implications, criticisms of locus of control research: A review. Journal of Black Studies, 6(3), 221-256.

Rhodes, R. W. (1988). Holistic teaching/learning for Native American students. Journal of American Indian Education, 27(2), 21-29.

Ribal, J. E. (1963). Social character and meaning of selfishness and altruism. Sociology and Social Research, 47, 311-321.

Ross, A. C. (1982). Brain hemispheric functions and the Native American. Journal of American Indian Education, 21(3), 2-5.

Rychlak, J. F. (1975). Affective assessment, intelligence, social class, and racial learning style. Journal of Personality and Social Psychology, 32, 989-995.

Ryckman, R. M., Posen, C. F., & Kulberg, G. E. (1978). Locus of control among American and Rhodesian students. Journal of Social Psychology, 104, 165-173.

Sack, W. H., Beiser, M., Clarke, G., & Redshirt, R. (1987). The high achieving Sioux Indian child: Some preliminary findings from the flower of two soils project. Journal of the National Center (University of Colorado Health Sciences Center), 1(1), 37-51.

Sampson, G. L. (1981). Attainment of Piaget's formal operational level in mathematics relative to ethnic group and reading ability. Dissertation Abstracts International, 41(12), 5014.

Sandefur. (1987, January 21). Mathematics teachers are too lazy to change their ways: As a result, teaching is stagnant. Chronicle of Higher Education.

Santos, S. L. (1986). Promoting intercultural understanding through multicultural teacher training. Action in Teacher Education, 7(1), 19-25.

Sapp, G., Elliott, G. R. & Bounds, S. (1983). Dealing with diversity among college students. The Journal of Humanistic Education and Development, 22(2), 80-85.

Sawyer, J. (1966). The altruism scale: A measure of cooperative, individualistic, and competitive interpersonal orientation. American Journal of Sociology, 71, 407-416.

Scallon, R., & Scallon, S. (1979a). The literate two-year-old: The fictionalization of self. Unpublished manuscript, 8.

Scallon, R., & Scallon, S. (1979b). Thematic abstraction: A Chipewyan two-year-old. Unpublished manuscript, 2.

Scallon, R., & Scallon, S. (1983). Narrative, Literacy, and Face in Interethnic Communication. New Jersey: Ablex Publishing Company.

Schindler, D. E., & Davison, D. M. (1985). Language, culture, and the mathematics concepts of American Indian learners. Journal of American Indian Education, 24, 27-34.

Schoem, D. (1982). Explaining Jewish student failure. Anthropology and Education Quarterly, 13(4), 308-322.

Scott, P. B. (1983). Mathematics and achievement test scores of American Indian and Anglo students: A comparison. Journal of American Indian Education, 22(3), 17-19.

Scott, S. A. (1979). Comparative linguistic processing, dichotic listening, and cerebal listening. Dissertation Abstracts International, 40(3-A), 1368-1369.

Scott, S., Hynd, G. W., Hunt, L., & Weed, W. (1979). Cerebal speech lateralization in the Native American Navajo. Neuropsychologia, 17(1), 89-92.

Serpell, R. (1976). Culture's influence on behavior. London: Methuen.

Shade, B. J. (1982). Afro-American cognitive style: A variable in school success? Review of Educational Research, 52, 219-244.

Shannon, L. (1975). Development of time perspective in three different groups: A cultural difference or an expectancy interpretation. Developmental Psychology, 11(1), 114-115.

Shannon, L. (1976). Age change in time perspective in Native Americans, Mexican Americans, and Anglo-Americans. Journal of Cross-Cultural Psychology, 7(1), 117-122.

Sheingold, K., & Pea, R. D. (1981). The impact of classroom computer experiences on children's problem solving, planning and peer collaboration. New York: Bank Street College of Education.

Siegel, I., Anderson, L. M., & Shapiro, H. (1966). Categorization behavior in lower- and middle-class preschool children: Differences in dealing with representation of familiar objects. Journal of Negro Education, 35, 218-229.

Silberman, C. (1970). Crisis in the classroom. New York: Vantage.

Skutnabb-Kangas, T. (1981). Guest worker or immigrant--different ways of reproducing an underclass. Journal of Multilingual and Multicultural Development, 2, 89-115.

Slade, M. (1982, October 24). Aptitide, intelligence or what? New York Times.

Sleeter, C. E., & Grant, C. A. (1987). An analysis of multicultural educatior in the United States. Harvard Educational Review, 57(4), 421-444.

Smith, A. (1986). Strategies for individualizing instruction across the disciplines for the culturally diverse learner. In Thinking across the disciplines. Proceedings of the Annual Conference of the International Society for Individualized Instruction, October 9-11, 1986, Atlanta, Georgia.

Smith, L. (1981). Mathematics education in an American Indian culture. Unpublished manuscript, Arizona State University.

Smith, L. H., & Renzulli. (1984). Learning style preferences: A practical approach for classroom teachers. Theory Into Practice, 23(1), 44-55.

Spolsky, B. (1988). Bridging the gap: A general theory of second language learning. TESOL Quarterly, 22(3), 377-396.

Staub, E. A. (1970). A child in distress: The influence of age and number of witnesses on children's attempts to help. Journal of Personality and Social Psychology, 14, 130-140.

Staub, E. A. (1971a). A child in distress: The influence of nurturance and modeling on children's attempts to help. Developmental Psychology, 5, 124-132.

Staub, E. A. (1971b). Use of role playing and induction in training for prosocial behavior. Child Development, 42, 805-816.

Steinberg, R. H. (1974). Psychometric and operative intelligence in an Indian school population. Dissertation Abstracts International, 35(5-B), 2449.

Stodolsky, S. S., & Lesser, G. (1967). Learning patterns in the disadvantaged. Harvard Educational Review, 37, 546-593; reprinted Series No. 5, Harvard Educational Review, 1975, 22-69.

Suarez-Orozco, M. M. (1985). Opportunity, family dynamics and school achievement: The sociocultural context of motivation among recent immigrants from Central America. Paper read at the University of California Symposium on Linguistics, Minorities and Education. Tahoe City, May 30-June 1.

Suarez-Orozco, M. M. (1986). In pursuit of a dream: New Hispanic immigrants in American inner city schools. Doctoral dissertation, Department of Anthropology, University of California, Berkeley.

Suarez-Orozco, M. M. (1987a). "Becoming somebody": Central American immigrants in U.S. inner-city schools. Anthropology & Education Quarterly, 18(4), 276-286.

Suarez-Orozco, M. M. (1987b). Towards a psycho-social understanding of Hispanic adaptation to United States schooling. In Trueba, H. T. (Ed.) Learning and the language minority student (156-168). Cambridge: Newberry House Publishers.

Sudzina, M. (1987). An investigation of the relationship between the reading styles of second graders and their achievement in three different basal reader programs. Doctoral dissertation, Temple University, Philadelphia, PA.

Swanson, R. A., & Henderson, R. W. (1979). Introduction of a concrete operational concept through televised modelling: Evidence and speculation on mediational processes. Contemporary Educational Psychology, 4(3), 202-210.

Swisher, K., & Deyhle, D. (1987). Styles of learning and learning of styles: Educational conflicts for American Indian/Alaskan Native youth. Journal of Multilingual and

Multicultural Development, 8(4), 345-360.

Tafoya, T. (1982). Coyote's eyes: Native cognitive styles. Journal of American Indian Education, 21(2), 21-33.

Terrell, J. E., & Terrell, D. (1974). Indian women of the western morning. New York: Dial Press.

Trimble, J. E. (1981). Value differentials and their importance in counseling American Indians. In Pederson, P., Draguns, J., Lonner, W., & Trimble, J. Counseling across cultures (2nd ed.). Honolulu: University Press of Hawaii.

Trimble, J. E., & Richardson, S. S. (1982). Locus of control measures among American Indians. Journal of Cross-Cultural Psychology, 13(2), 228-238. (Also published in White Cloud Journal.)

Trotman, F. K. (1977). Race, IQ, and the middle class. Journal of Educational Psychology, 69, 266-273.

Tyler, J. D., & Holsinger, D. N. (1975). Locus of control differences between rural American Indian and white children. Journal of Social Psychology, 95, 149-155.

Valdivieso, R. (1986). Hispanics and schools: A new perspective. Educational Horizons, 64(4), 190-196.

Valverde, S. A. (1987). A comparative study of Hispanic high school dropouts and graduates: Why do some leave school early and some finish? Education and Urban Society, 19(3), 320-329.

Van Ness, H. (1981). Social control and social organization in an Alaskan Athabaskan classroom: A microethnography of 'getting ready' for reading. In Trueba, H., & Guthrie, G. (Eds.), Culture and the Bilingual Classroom. Rowley: Newbury House Publishers, Inc.

Vernon, P. E. (1969). Intelligence and cultural environment. London: Methuen.

Vogt, L. A., Jordon, C., & Tharp, R. G. (1987). Explaining school failure, producing school success: Two cases. Anthropology and Education Quarterly, 18(4), 276-286.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Cambridge, Mass.: Harvard University Press.

Wachs, T., Uzgiris, I., & Hunt, J. McV. (1971). Cognitive development in infants of different age levels and from different environemntal backgrounds: An explanatory investigation. Merrill-Palmer Quarterly, 17, 283-316.

Wallis, P. (1984). Holistic learning--a must with American Indian students. Momentum, 14.

Wax, M. L., Wax, R. H., & Dumont, R. V., Jr. (1964). Formal education in an American Indian community. Social Problems, 11(Suppl.), 95-96.

Webb, G. M. (1983). Left/Right brains, teammates in learning. Exceptional Children, 49, 11-15.

Wedlund, G., (Ed.). (1987). Directory of learning/teaching styles practitioners. Alexandria, VA: Association for Supervision and Curriculum Development.

Weitz, J. M. (1971). Cultural change and field dependence in two native Canadian linguistic families. Unpublished doctoral disseration, University of Ottawa.

Werner, O., & Begishe, K. Y. (1986). Styles of learning: The evidence from Navajo thought. Paper presented at the conference on styles of learning.

Wheeler, R. (1980). An alternative to failure: Teaching reading according to students' perceptual strengths. Kappa Delta Pi Record, 17, 59-63.

White, S., Tharp, R. G., Jordan, C., & Vogt, L. (1988). Cultural patterns of cognition reflected in the questioning styles of Anglo and Navajo teachers. In Topping, D., Kobayshi, V., & Crowell, D. C. (Eds.) Thinking: The Third International Conference. Lawrence Erlbaum.

Williams, D. G. (1986). Simultaneous and sequential processing, reading, and neurological maturation of Native Indian (Tsimshian) children. Unpublished doctoral disertation, University of British Columbia.

Wilson, R. (1971). A comparison of learning styles in African tribal growth with Afro-American learning situations and the channels of cultural connection: An analysis of documentary material. Doctoral dissertation, Wayne State University. 35/05-A,71-29811.

Witkin, H. A. (1950). Individual differences in ease of perception of embedded figures. Journal of Personality, 19, 1-15.

Witkin, H. A. (1962). Psychological differentiation. New York: Wiley.

Witkin, H. A. (1967). A cognitive style approach to cross-cultural research. International Journal of Psychology, 2(4), 233-250.

Witkin, H. A., & Goodenough, D. R. (1981). Cognitive styles: Essence and origins. New York: International Universities Press, Inc.

Witkin, H. A., Moore, C. A., Goodenough, D. R., Cox, P. W. (1977). Field-dependent and field-independent cognitive styles and their educational implications. Review of Educational Research, 47(1), 1-64.

Wober, M. (1967). Adopting Witkin's field-independence theory to accommodate new information from Africa. British Journal of Psychology, 58, 29-38.

Wolcott, H. (1967). A Kwakiutal village and school. Chicago: Holt, Rinehart & Winston, Inc.

Woolard, K. A. (1981). Ethnicity in Education: Some problems of language and identity in Spain and the United States. Unpublished manuscript, Dept. of Anthropology. Berkeley: University of California.

Wylie, L. (1976). The school at Vaucluse: Educating the French child. In Roberts, J. I., & Akinsanyo, S. K. (Eds.) Schooling in the Cultural Context (pp. 84-104). New York: David McKay.

Yogeu, A., & Ilan, Y. (1987). Does self-esteem affect educational aspirations? The case of the ethnic enclave. Urban Education, 22(2), 182-202.

Young, V. H. (1970). Family and childhood in a Southern Georgia Community. American Anthropologist, 72, 269-288.

Zigler, E., Abelson, W., & Seitz, V. (1973). Motivational factors in the performance of economically disadvantaged children on the Peabody Picture Vocabulary Test. Child Development, 44, 294-303.

Zigler, E., & Butterfield, E. (1968). Motivational aspects of changes in IQ test performance of culturally deprived nursery school children. Child Development, 39, 1-14.

APPENDIX A
REVIEW OF LITERATURE CATEGORIZATION

REVIEW OF LITERATURE CATEGORIZATION

AUTHOR(S) YEAR	SUBJECTS	ASPECTS	FINDINGS
O.A Cattey (1980)	Navajo, Chinese, Anglo-American cultures	* Cultural differences in processing information	** Both the Chinese & the Navajo cultures: ** employ language differently than Anglos ** employ right-hemispherically oriented myths, metaphors, symbols, and allegories ** stress harmony & unity --a basic "oneness"
Callaghan	Navajo & Anglo mothers & infants	* ethnic differences; agressiveness; visual contact	** Navajo babies showed greater passivity ** Navajo mothers used their eyes rather than their voice to attract the baby's attention
Colliers (1967)	Navajo children	* visual discrimination	** Navajos excel at tasks requiring fine visual discrimination
Coombs Coleman	Navajo children	* imagery/ verbal coding	** Navajo children excel in spelling 'visual) while Anglos excel in vocabulary (verbal)
Feldman Dittman (1970)	Indian children	* motor coordination	** pre-school Indian children evidence fine motor coordination
Freedman (1979)	Chinese, Caucasian, & Black babies	* ethnic differences	** Chinese babies are more amenable & adaptable in situations where other babies register annoyance and complaint
Havighurst (1957) John (1972) Coombs (1958)	Indian children	* imagery/ verbal coding	** Indian children learn more rapidly through imitation & direct visual & tactile experiences than through verbal processes

John (1972)	Navajo children	* styles of learning/visual	** Indian children of the Southwest are visual in approaches to the world
Kuipers	Navajo children	* visual & spatial configuration	** Navajo youngsters manifest greater sensitivity to geometric designs than white children of the same age
Scott (1979)	Navajo, Hopi Indians	* cerebral speech lateralization/ hemispheric orientation	** Navajos demonstrate a left ear (right cerebral hemisphere) advantage compared to the traditional right ear in Anglos ** lateralization for language in the Native American Hopi differs more dramatically than would be expected
O.B			
Lewis Gingerich (1980)	American Indian & non-Indian graduate students	* Leadership	** Indian students have a very different concept of a leader ** a task produces a leader and with the end of the task the function is fulfilled--a leader manifests different degrees of leadership behavior ** the quality of the leader's values stressed over the person
O.C			
Halpin Halpin Whiddon (1980)	American Indian & White children	* Self esteem, locus of control	** Identification of specific parental behaviors across both cultures that appeared to be antecedents of an internal locus of control and positive self esteem
1.A			
Hale (1981)	Black children	* Cultural influences	** Learning environments do not match the culture & learning styles of Black students

Akbar (1975)	Afro-American child	*cultural characteristics	**The Afro-American child:** ** is highly effective ** uses language requiring a wide use of many coined interjections ** uses considerable body language ** relies on words that depend upon context for meaning ** prefers using expressions that have several connotations ** adopts a systematic use of nuances of intonation and body language such as eye movement and positioning ** prefers oral-aural modalities for learning communication ** is highly sensitive to others' nonverbal cues ** seeks to be people oriented ** is sociocentric ** uses internal cues for problem solving ** feels highly empathetic ** likes spontaneity ** adapts rapidly to novel stimuli
Boykin (1978) Holt (1964) Silberman (1970)			** suggested the reason White children are more academically successful is that they have a greater tolerance for monotony; affective stimulation and vivacity are necessary for the Black child to be motivated to achieve in academics

Boykin (1978) Marans Lourie (1967) Goldman Sanders (1969) Wachs Uzgiris Hunt (1971)			** suggested that the Black home environment provides an abundance of stimulation, intensity, & variation through high noise levels & large numbers of people; analyzed as over stimulation & conceptual deafness by some social scientists, Boykin proposed greater psychological & behavioral verve in Black children as a result
Brazelton Young Bullowa (1971)	Zambian & White American mothers	* Early development	** Zambian mothers' high contact, loving environment for their babies provided more handling & feeding contact & produced more stimulation, alertness, social interest and consolability
Cohen (1971)			** differences between children who function with relational & analytical styles is so great that children whose cognitive organization is relational are unlikely to be rewarded with grades regardless of their native ability, extent of learning, or experiences; children who live in more fluid or "shared-function" primary groups are more likely to exhibit the relational cognitive style
Dixon Foster (1971)			** the non-Western heritage of Afro-Americans suggests knowledge stems from the proposition that, "I feel, therefore I think, therefore, I am" vs. "I think, therefore, I am."

Esen (1973)	Nigerian culture	child-rearing practices	** referred to clusters of African attitudes as "care syndrome"; children grow up in a social network characterized by physical closeness, acceptance & care
Gitter Black Mostofsky (1972) Young (1970)			** found Black children to be more feeling oriented, people oriented, & more proficient at non-verbal communication than White children
Hilliard (1976)			** **Afro-American people:** ** tend to view things in their entirety & not as isolated parts ** seem to prefer inferential reasoning rather than deductive or inductive reasoning ** tend to approximate space, number, & time instead of aiming for complete accuracy ** appear to focus on people & their activities rather than objects ** have a keen sense of justice & quickly perceive injustice ** tend to prefer novelty, personal freedom & distinctiveness ** in general, tend not to be word dependent, but are proficient in non-verbal as well as verbal communication
Lester (1969)			** Black culture emphasizes the nonverbal; experience counts, not what is said

Morgan (1976)	** maintained that schools do not support the natural energy level of Black children who need an active environment for successful learning; Black children elicit more punishment and are labeled hyperactive more frequently because of their high motoric activity
Newmeyer (1970) Young (1970) Gitter Black Mostofsky (1972)	** supported the hypothesis that Black culture develops proficiency in non-verbal communication
Piestrup (1973)	** identified factors which created good rapport in teacher-Black student interaction: warmth, verbal interplay during instruction, rhythmic style of speech & distinctive intonation in speech patterns
Silberman (1970)	** described stylistic dimensions of the oral tradition in Black culture: call and response, rhythmic patterns, spontaneity & concreteness
Young (1970)	** suggested that White children are object oriented & have numerous opportunites to manipulate objects & discover properties & relationships; Black children are more people oriented; the affective orientation is linked to the greater continuity in the behavior of Black mothers

Zigler Butterfield (1968) Zigler Abelson Seitz (1973)			** rapport with the teacher in educational settings seems to be strongly related to academic performance for Black students & not very critical for Whites
2.A			
LeBrasseur Freark (1982)	**American Indian**	*** Cultural values**	** Many different Indian tribes have the following values that may influence school performance: avoidance of competition, high value on cooperation, strong peer influence ** proposed teaching strategies for Native American students
2.B			
Knight Kagan (1982)	**Anglo-American & Mexican-American family structure**	*** Cooperative Competitive Social Behavior**	** Reported the absence of a relation between social behavior & the number of siblings & birth order; family size and ordinal position of the child may interact with other factors (McClintock et al., 1979) in influencing prosocial behavior
McClintock Bayard McClintock (1979)			** suggested the larger size of the M-A family, strength of familial interdependence, and patterning of relationships as reasons for their relatively greater preference for cooperative or prosocial outcomes in interdependent situations
Ribal (1963) Sawyer (1966)			** suggested larger family size is associated positively with generosity

Staub (1970) (1971a/b)			** the cultural difference in family size may have resulted in a higher proportion of older siblings among the M-A children which may have resulted in a cultural difference in social behavior
2.C			
Marashio (1982)	Sioux, Tewa, Hopi, Winnebago	* Traditional Native Americans' perspectives toward teaching and learning	** Juxtaposed the traditional holistic approach to learning that pervades Native American culture with the utilitarian education commonly experienced in Euro-American schools
2.D			
Ross (1982)	Native American	* Brain Hemispheric Functions	** Native Americans are more dominant in right hemispheric thinking
2.E			
Tafoya (1982)	American Indian	* Traditional teaching paradigms * child-rearing practices	** Traditional Indian learning focuses on: process over product, legends and stories as traditional teaching paradigms, knowledge obtained from the self, cognitive development through problem-solving techniques
Scallon Scallon (1979a)	Athabaskan Indian children	* literacy & orality	** orality rather than essayist literacy
Scallon Scallon (1979b)	Athabaskan Indian children	* child-rearing practices	** children observe from subordinate positions
2.F			
Trimble Richardson (1982)	American Indian adults	* Locus of control	** Ethnic minorities and those from low SES levels score in a more external locus of control direction than Caucasians

Gurin Gurin Lao Beattie (1969)	Black students	** with adequate SES controls differences in locus of control may disappear
Lefcourt (1966)		** measuring locus of control for Black youth requires distinguishing how much control one believes most people in society possess (control ideology) and how much control one believes one personally possesses personal control)
Reynolds (1976)		
Tyler Holsinger (1975)	American Indian & Caucasian students	** may be negative implications to internal beliefs for some minority groups
Echohawk Parsons (1972)	American Indian & Caucasian students	** separate factors for (1) personal effort and attributes and (2) chance & supernatural
Jessor Graves Hanson Jessor (1968)	American Indian, Caucasian, Spanish American peoples	** separation of personal control from ideological control requires more research in the structural equivalence of the various scales to measure locus of control
Munro (1979)	Blacks & Whites in Africa	
Ryckman Posen Kulberg (1978)	Rhodesian & American students	
Parsons Schneider (1974)	People of Western, Eastern & Middle Eastern countries	
Jones Zoppel (1979)	Black populations in Jamaica & U.S.	
Trimble (1981)	Indian & Alaska Native populations	

3.A Sapp Elliott Bounds (1983)	Black & White Urban College students	* Learning styles	** Students demonstrate participative and collaborative learning styles more than avoidant, competitive, dependent or independent
4.A Cheek (1984)	Native Americans	* Math education	** Proposed directions for research based on 7 guiding questions regarding mathematics education for Native Americans
Scott (1983)	Pueblo & White students entering teacher training	* mathematics achievement test scores	** Pueblo students scored higher on application problems related to real-world experience; the applications-oriented approach stressed in teaching math may be even more important to native students
4.B Bradley (1984)	Native American	* Culture and learning styles related to learning math	** Navajo students: ** learn more effectively through culture-based mathematics though mainstream mathematics cannot be pushed aside; very little research has been done relating the indigenous mathematics of Native Americans to school mathematics ** traditional Indian communities have highly sophisticated forms of nonverbal communication
Moore (1982) Smith (1981)	Navajo	* culture and learning styles related to learning mathematics	** speak a language that does not have a word for multiply, divide, if, cosine or sine, nor do students have the beliefs associated with them

			** find it difficult to accept equations as equal if the member parts are not identical ** have difficulty accepting problems in which a hypothetical situation is expressed ** in traditional Indian cultures are required to develop excellent memory skills, skills which may be a barrier in higher mathematics
Green (1977)	American Indians	* math education	** rebel against stringent discipline of high schools and choose not to study the most disciplined, visible Western forms of education
Cardell Cross Lutz (1978)	Mescalero Apache students	* math education peer learning	** achieved greater gains in math skills when spontaneous groups were formed by students for math activities
4.C Loflin (1984)	Eskimo children	* Cognitive abilities	** Proposed a model for reconstructing the logic underlying the communicative interaction of native Alaskan children to determine their natural reasoning ability
4.D Mahan (1984)	Anglo student teachers; Navajo, Hopi, & Apache elementary students	* Cultural & methodological concerns	** Administration of a "Frequent Concerns" survey of student teachers revealed they can be culturally sensitive to reservation school Indian students
4.E Mahan Henderson (1984)	Navajo	* Cultural influences	** Socioeconomic and cultural factors influence the effectiveness of education for the

	Navajo perception of education as an all-encompassing, life-long process contrasts with the institutional, systemized, and fragmented nature of mainstream educational approaches
Guthrie Hall (1981)	** cultural factors influence educational success or failure
Jencks Smith Acland Bane Cohen Gintis Heyns Michelson (1972)	** the most important determinant of education attainment is family background ** Indians have traditionally received inferior education & have been assigned low status & menial jobs leading to the perception of schooling as having little value in improving social & occupational status
Ogbu (1978)	** cooperation is stressed over competition ** the traditional Navajo independent life style based on seasonal changes contrasts with the 180-day structured school system ** Navajo custom of reticence on a first encounter with an unfamiliar person or situation creates difficulties on the very first day of school ** Navajo students may avoid eye contact with a teacher as a sign of respect for an elder ** Navajo children are given tremendous responsibility at a very young age; Navajo girls, as members of a matrilineal culture, have prestige and influ-

			ence over what happens in the home & are often owners of livestock and materials ** threats of physical punishment & force are unacceptable and ineffective methods of behavioral control in Navajo culture while teasing or shaming are common ** for Navajo students, praise may not be reinforcing ** Navajo children are taught to live for and be concerned with the present ** rather than "Explain-Read-Do-Recite" approaches to learning, Navajos prefer learning through extensive observation and imitation, along with the assurance of success ** Navajo cultural and religious taboos may be ignored by certain literature selections and art activities
5.A Allen Merrill (1985)		* Learning strategies	** Proposed adapting instructional intervention to match the learning strategies of individuals
5.B Chilcott (1985)	Arizona Yaqui Indians	* World view	** The Yaqui world view is not accommodated by modern industrial society and its system of education
5.C Keefe (1985)		* Learning style variables	** Learning style characteristics reflect genetic coding, personality development, and environmental adaptation

Letteri (1982)			** since some skills are more productive of school achievement than others, training should focus on enhancing these analytical skills, rather than matching styles
Keefe, ed. (1979)	Review of literature	* student learning styles	** the NASSP developed a multidimensional view of style with "Learning Style" as the all encompassing concept label for 21 elements; accepted Osborne & Wittrock (1983) models of generative learning; objective of providing teachers and learners with a workable diagnostic tool for more personalized education
Keefe, ed. (1982)	Review of literature	* student learning styles and brain behavior	
Keefe Languis (1983)			** defined 3 broad categories of style: cognitive, affective, physiological; style itself conceived of as a "gestalt"
5.D			
Light Martin (1985)	Review of literature on Native American culture	* American Indian culture's traditional view of children	** American Indian approaches to child guidance: ** dependence on adults ** respect for elders ** obedience through explanations for desired behavior
Gridley (1974)			** Indian children were taught to respect life
Terrell Terrell (1974)			** many rituals, like the Hopi Kachina, are related to children

Llewellyn Hoebel (1967)	Cheyenne Indians	* self-control, self-restraint; childrearing customs	** children are to have parents' full attention, subsequently learning to respect elders; chastisement of children is abhorred ** children are encouraged to play in such ways that train them for adult responsibilities
Opler (1946)	Jicarrila Apache Indian	* childrearing customs	** the grandparent serves as main disciplinarian; rigorous training to teach moral standards and develop character
Gill (1982)	American Indians	* childrearing customs	** American Indians attach a high degree of importance to childhood as the time for beliefs, values, and attitudes instruction
5.E			
Ogbu (1985)	Minority groups	* Primary and secondary cultural differences	** Explored societal treatment of minorities and nature of minorities' own response to treatment to support need for understanding minority learners' sense of social identity and cultural frame of reference that develop and influence their strategies toward schooling; proposed accommodation without assimilation
5.F			
Osborne (1985)	Native North Americans	* Cognition	**Native North Americans:** ** have strengths which are not tapped by tests traditionally used by Western societies ** may develop compensatory skills because of rigors of survival in traditional environments
Dennis (1943)	Hopi Indians	* animism * consciousness of inanimate objects * moral realism	

Cole Gay Glick Sharp (1971)	Kpelle	* cross-cultural	** particularly the Inuits may have developed greater figure skills than other cultural groups
Annis Frost (1973)	Euro-Canadians & Cree Indians	* visual acuity * environment	** are more dominant in right hemispheric thinking related to creative abilities
Kleinfeld (1973) (1975) (1979)	Inuit, Eskimo & Indian students	* visual, spatial, aural modes * watch-then-do learning style * memory coding * cross-cultural testing	** may respond more accurately via the left ear on listening tasks ** particularly the Navajo, as well as the Chinese, are likely to be better in visual discrimination skills
McArthur (1973)	Inuits & Nsengas	* psychometric intelligence	** as well as non-Indian students, may develop cognitive styles across age cohorts rather than longitudinally
Anhelm (1974)	American Indian & Anglo students	* visual preferences	** may prefer contrast over Anglo preferences of angularity, linearity, and curvilinearity
Beaulieu (1974)	Sioux & Mohawk	* perceived information needs	
Cole Scribner (1974)		* environment	** the visual acuity differences of Native Americans may be tuned by the early visual environment; the carpentered nature of urban surroundings may result in greater awareness of horizontal and vertical lines among urban dwellers as opposed to people who live in non-carpentered environments
Steinl (1974)	Canadian Indians	* psychometric & operative intelligence	
Dasen (1975)	Inuit Indians; Ebrie, Africa; Aboriginals, Australia	* perception skills * conservation skills	
Norton (1975)	Caucasian, Black, & Indian Children	* nonverbal behaviors	** emphasize watching, listening, and waiting in order to learn
Albas McCluskey Albas (1976)	White Canadians & Cree Indians	* emotional content of speech	** develop high self-esteem in school through praise of grades, parental pleasure at their effort, and praise
Granzberg (1976)	Euro-Canadians &	* self-control * dependence	** do not become more future-oriented with age, as do Anglo students

	Cree Indians	* abstract ability	** may define self-control differently than
Serpell	Navajos & Anglos	* hemispheric dominance * environment	other cultures ** may identify emotions from vocalizations by
Shannon (1975) (1976)	Native Americans, Mexican-Americans & Anglos	* perceptions of time	members of their own culture far more accurately than those by members of other cultures ** may perceive nonverbal behaviors of teachers
Kagan Buriel (1977)	Mexican-Americans	* field dependence/ independence	differently because of cultural group membership ** may have a different world orientation than
Martin (1977)	Indian & Non-Indian Students	* developmental levels	people of other cultures ** may have a different perception of time than people of other cultures
Odell (1979)	Navajo Adults & Children	* developmental levels	** evidence no significant difference regarding operational
Scott (1979)	Navajos & Anglos	* hemispheric dominance	abilities when compared to whites ** may find direct
Scott Hynd Hunt Weed (1979)	Navajos	* hemispheric dominance * speech lateralization	instruction superfluous when modeling has occurred ** may benefit from both operative and psychometric intelligence
Swanson Henderson (1979)	Papago Children	* visual discrimination * direct instruction	investigations ** may develop a broad cluster of spatial-field-independence
Cattey (1980)	Chinese & Navajos	* child-rearing practices * hemispheric dominance	abilities and a distinctive cluster of abilities involving inductive reasoning from nonverbal stimuli because of ecology and child-rearing practices
Halpin Halpin Whiddon (1980)	Flathead Indians & Anglos	* self-esteem * locus of control * child-rearing practices	** may not receive valid results on psychological tests used in particular cultural contexts
Sampson (1981)	Black, White, & Indian Students	* formal operational ability * reading ability	

Masden (1982)	Hopi Indians	(replication of Dennis's 1943 study)	
Tafoya (1982) Witkin Moore Goodenough Cox (1977)	American Indians	* child-rearing practices * watch-then-do learning style * storytelling * cognitive styles	
5.G			
Schindler Davison (1985)	**American Indian learners**	*** Language, culture, & mathematics concepts**	** Any classroom that may contain children whose dominant language is not English, requires a teacher who can analyze the dominant language and create a second language of mathematics descriptions that are meaningful ** indigenous peoples are often unable to solve mathematics problems that are not perceived as culturally relevant ** native speakers of Navajo find it difficult to construct an exactly parallel systematic analysis of math concepts in English
Bradley (1984)	Navajo students		** Navajo language do not have words for multiply, divide, if, cosine or sine; students have difficulty with concepts for which their language has no words, such as a hypothetical situation
Closs (1977)	Copper Eskimo culture		** tells of the analogous story told to show the futility of counting beyond everday numbering

Leap McNett Cantor Baker Laylin Renker (1982)	American Indian elementary students		** Picuris American Indian math involves knowing when "not" to count -- computational "silence"; a math operation that is not typically performed in an American Indian language creates conflict between what is linguistically possible and culturally real
Gay Cole (1967)	Kpelle of Liberia		** presenting math concepts in English without consideration of Kpelle language development & cultural usage led to rote memorization without comprehension of concepts
Smith, L. (1981) Moore, C. G. (1982)	Navajo students		** styles of thought & communication in the Navajo language influence the students' approach to learning math concepts & solving problems
6.A Lee, M. W. (1986)	Black students	* Learning styles & computer programming	** Cognitive styles can be more appropriately matched through the use of computers; self esteem is also enhanced ** one's level of knowledge is increased when one functions competently in both the relational & analytical thinking styles ** Black children are often proficient in the relational learning styles which emphasize visual and audio stimuli & not in the analytical skills valued in American public schools

			** teaching Black children computer programming at an early age provides them opportunities to develop analytical thinking skills while their environment is teaching them to function with relational thinking skills
Cole (1971)			** cognition develops in conjunction with the behaviors in which people engage in everyday life, regardless of ethnic group affiliation
Hale (1981)			** a person's behavioral style is usually a cultural framework for how that person views the world; successful people integrate different styles
Havighurst (1976)			** social classes & ethnic groups are two major ecological structures that produce diversity in human lifestyles & development
Sheingold Pea (1981)			** programming computers encourages development of problem-solving skills
Stodolsky Lesser (1967)			** different kinds of intellectual skills are fostered/hindered in different environments
Webb (1983)			** relational learners fail in school far more often than analytical learners
6.B			
Amodeo Brown (1986)	Students from Mexico	* Differences in Mexican & American schools regarding acceptable behavior	In Mexico: ** students' interactions with their teachers tend to be formal

			** students are to be punctual ** students are to respect authority ** students are graded on manners and academics ** students are to be acknowledged before speaking ** the lecture method is widely used
Estrada LaBelle (1979)	Mexican students	* learning styles	** schools emphasize cooperation
6.C			
Valdivieso (1986)	**Hispanic students**	*** Academic achievement**	** Hispanics are in greater need of a home-to-school link
7.A			
Foreman (1987)	**American Indians**	*** Self-determination**	** Educational designs which select one body of information to be presented to all students at a set time and at some forced rate cannot possibly accommodate all learners
Ross (1982)	Native Americans	* brain hemispheric functions	** Native Americans are more dominant in right hemispheric thinking
7.B			
McNeil (1987)		*** Learner differences**	** the only valid school reform is that which considers students' varied differences & strengths
7.C			
More (1987)	**Native Indians**	*** Internal Cognitive Process**	**Native people evidence:** ** a higher frequency and relative strength in global processing on both verbal and non-verbal tasks ** a relative strength in simultaneous processing, but a
MacArthur (1968)	Canadian Eskimos/ Northern Canadian Indians	* field dependence/ independence	

Weitz (1971)	Algonkian/ Athapaskan	* field dependence/ independence	possibility that sequential processing abilities develop much slower than simultaneous skills because they are not used in the primary grades
John (1972)	Navajo children	* imagery	
Krywaniuk (1974)	Native Indians	* simultaneous/ successive cognitive processes	** the possibility of using strengths in simultaneous processing to develop sequential processing
Messer (1976)		* impulsive/ reflective	** a higher frequency and relative strength in processing visual/spatial information
Witkin Moore Goodenough Cox (1977)		* field dependence/ independence	** a higher frequency and relative strength among Indian students in using imagery for coding and understanding
Das Kirby Jarman (1979) (1982)		* simultaneous/ successive cognitive processes	** reflective more than impulsive (or watch-then-do rather than trial-and-error) processing
Bradshaw Nettleton (1981)		* global/analytic	
Das Manos Kanungo (1975)	Canadian Native, Black & White children	* cognitive & personality tests	
Tafoya (1982)	American Indians	* imagery/ verbal coding	
Kaufman Kaufman (1983)	Navajo & Sioux	* simultaneous/ successive cognitive processes	
Greenbaum Greenbaum (1983)	American Indians	* imagery/ verbal coding	
Kirby (1984)		* simultaneous/ sequential cognitive processes	

More (1984)	Okanagan/ Nicola Indians	* imagery/ verbal coding * impulsive/reflective * field dependence/ independence * global/analytic * simultaneous/successive cognitive processes
Cullanine (1985)	Native Indians	* field dependence/ independence
Bryant (1986)	Native Indians	* imagery/ verbal coding
Karlebach (1986)	Native Indians	* imagery/ verbal coding
Williams (1986)	Tsimshian Native Indians	* simultaneous/ sequential processes
		*** External Conditions**
Vernon (1969)	Northern Canadian Indians & Inuits	* visual, auditory, and kinesthetic sensory modes
Bowd (1971)	Native Indians	* spatial/mechanical abilities
Kaulbach (1984)	American Indians & Eskimos	* visual, auditory, and kinesthetic sensory modes
		*** Teaching and Communication Styles**
Kleinfeld (1972)	Indians & Eskimos	* teaching styles/ communication styles
Philips (1972)	Warm Springs Children	* communication styles
Erickson Mohatt (1982)	Indian Students	* communication styles
Scallan Scallan (1983)		* interethnic communication styles

Smith Renzulli (1984)		* teaching styles/ learning styles
		*** Traditional Learning Styles**
Vernon (1969)	Native Indians	* global learning styles
Gue (1971)	Native Canadian Indians	* value orientations
Weitz (1971)	Native Canadian Indians	* cross-cultural cognitive styles
John (1972)	Navajo Children	* learning styles * storytelling
Philips (1972)	Warm Springs Children	* communication styles
Berry (1976)	Native Indians	* cross-cultural cognitive styles
Davis Pyatowski (1976)	Indian Children	* value orientations
Berry (1980)	Native Indians	* communication styles
Davidman (1981)		* learning styles
Erikson Mohatt (1982)	Indian Children	* communication styles
Ross (1982)	Native Americans	* brain hemispheric functions
Tafoya (1982)	American Indians	* child-rearing practices * learning styles * storytelling
Scallon Scallon (1982)	American Indians	* storytelling * talking about self * child-rearing practices

		* self-testing * learning style	
Chrisjohn Peters (1986)	American Indians	* brain hemispheric functions	
Pepper Henry (1986)	Native Indians	* learning styles	
7.D			
Ogbu (1987) (1986) (1983) (1982a) (1982b) (1977) (1974)	Asian- American, Black, Chicano, Chinese, Filipino, Japanese, Mexican American, Mexicano, Native American, Native Hawaiian, Puerto Rican, Punjabis, East Asian, West Indian, White American, Central & South American immigrant students	* Cultural domains and minority performance in school * Primary & secondary cultural differences	** The main factor differentiating more successful from less successful minorities appeared to be nature of history, subordination, and exploitation of the minorities and nature of the minorities' own instrumental and expressive responses to their treatment ** students may attend school with different assumptions about "getting ahead" based on primary cultural differences ** minority groups who do well in school are those who differ more from the dominant group in language and culture ** students may attend school with a different style of learning than the one emphasized at school ** the Chinese have a traditional style of learning that emphasizes external forms & rote memorization ** difficulties in crossing cultural/ language boundaries, folk theory of making it and survival strategies, and distrust of white people and the public schools

			shape the schooling strategies of involuntary minorities ** in the 1930's, Asian-American & Mexican-American students were experiencing difficulty with the English language in American public schools; by 1947, the Asian-Americans had conquered the limited language proficiency problem but the Mexican-Americans were still experiencing difficulty ** in the 1960's & 70's, Chinese, Filipino, & Japanese students did better than Black and Mexican-American students in the same schools
Suarez-Orozco (1987) Matute-Bianchi (1986) Valverde (1987) Woolard (1982)	Hispanics	* school achievement	** Hispanics of Central & South America and Cuba do better than Mexican-American, native-born Chicano, & Puerto Rican students and are less likely to dropout
Coleman (1966) Slade (1982)		* standardized testing	** Asian-American students did better than other language & cultural minorities on standard exams
Gibson (1983) Matute-Bianchi (1986) Suarez-Orozco (1986)			** cross-cultural evidence of varibility in minority school performance facing cultural, language, and other barriers

Vogt Jordan Tharp (1987)	Native Hawaiian & Navajo children	*Cultural compatibility/ incompatibility	** Culturally specific compatibilities contribute to educational effectiveness; cultural incompatibility is one credible explanation for school failure; elements found effective for Native Hawaiian children are not culturally compatible or effective for Navajo children ** Hawaiian teaching-learning interactions are characterized by voluntary participation; traditional school-culture script is "one person at a time" ** indirect praise and praise to a group more effective than direct praise of one child ** industriousness required school adaptation to children's culturally based skills and inclinations ** management routines compatible with Navajo culture were more effective: ignoring misbehavior or lowering one's eyes, indirectly referring to the misdeed while praising honorable behavior standards
Au (1980) Au Jordan (1981)	Native Hawaiian children	* reading comprehension	** emphasis on teacher responsiveness to children's talk generated spontaneous change in interaction style and sociolinguistic participation structures
Cazden John (1971) John (1972)	American Indians	* thought processes/ holistic	** holistic nature of thought characterized by a preference for working with the whole before attempting analysis of

Phillips (1972) White Tharp Jordan Vogt (1985)			parts or sections (linear)
Crowell (1977) Gallimore Boggs Jordan (1974) Klein (1981)	Native Hawaiian children	* positive reinforcement & on-task behavior	** motivation, content coverage, & industriousness did not result in school success as measured on standardized tests; selection of educational practices based, in part, on their cultural compatibility produced success on standardized reading tests
D'Amato (1986)	Native Hawaiian children	* personal interaction	** balance required between warmth or solidarity and toughness or autonomy; these extremes were ineffective with Navajo children
Jordan (1977)	Native Hawaiian children	* instructional practice	** emphasis on comprehension, focusing on meaning over decontextualized skills drill, is more effective
Gallimore Boggs Jordan (1974) Jordan (1977) (1984)	Native Hawaiian children	* classroom interaction	** pattern of multiple caretakers and companion groups in natal culture manifests itself in high rates of peer interaction, frequent scanning for other children's errors, and offering and soliciting peer help
Jordan Tharp Vogt (1985)	Navajo children	* male/female roles	** separation of sexes clearly defines cultural roles

Anderson (1988)	**Anglo-European Whites, Cajun Whites, Appalachian Anglos, American Indians, Mexican-Americans, African-Americans, Vietnamese-Americans. Puerto Rican-Americans Chinese-Americans Japanese-Americans Europeans**	* Cognitive/ Learning Styles	**Non-Western populations often:** ** differ in world views and cosmic orientations ** emphasize group cooperation ** reflect group vs. individual achievement ** value harmony with nature ** experience time as relative ** accept affective expression ** comes from extended families ** think holistically ** view religion as inseparable from culture rather than as a distinct part ** accept the world view of other cultures without expressing the superiority of their own ** are socially, not task, oriented ** perceive elements as a part of a total picture ** depend on verbal tasks ** learn better from materials which have a human/social content and which are characterized by fantasy and humor ** are strongly influenced by authority figures' expressions of confidence or doubt in their performance ability ** often find their learning styles conflict with traditional
Allport Pettigrew (1957)	African & European Children	* perception of movement	
Bruner (1966)	African & European Children	* perception of conservation task	
Witkin (1967)		* environmental factors	
Wober (1967)	Africans	* cognitive systems	
Gagne Cephart (1968)	Blacks	* disjunctive/ conjunctive concepts	
Killbride Robbins (1968)	Blacks & Whites	* linear perspective * depth	
McNeil (1968)	Blacks & Whites	* school environment	
Cohen (1969)	Mexican-American, Puerto Rican, & Black children	* school environment * field dependence/ independence * communication style	
McNeil Phillips (1969)	Blacks & Whites	* school environment	

Mbiti (1970)	Africans	* world orientation	school environments ** often find their
Messick (1970)	Mexican-Americans	* field dependence/ independence	communication styles conflict with Western communication styles
Dregoski Serpell (1974)	African & European children	* classification system	** use imagery as a dominant way of thinking, writing, conceptualizing, and speaking
Kagan Madsen (1971)	Mexican, Mexican-American, Anglo-American Children	* motivational styles	** tend to use the second person "you" to reflect group identity
Wilson (1971)		* learning styles	** think in descriptive abstractions ** perceive thought as wholistic
Matthews (1973)	Blacks & Whites	* evaluation of reality * cognitive systems	** emphasize extensive expression of concrete emotional words and metaphors
Ramirez (1973)	Mexican-Americans	* field dependence/ independence	** introduce themselves into the objectives of events
Ramirez Price-Williams (1974)	Mexican-Americans & Anglo-Americans	* field dependence/ independence * motivational styles	
Vygotsky (1978)		* communication style	
Cooper (1980)		* holistic learning * communication style	
McDermott (1980)	Blacks	* holistic/ affective learning	
Baldwin (1980)	Blacks	* world orientation	
Brown (1986)	Blacks	* holistic/ affective learning	
Sandefur (1987)		* teaching styles	

8.B

Banks (1988)	Black, Chinese, Irish Catholic, Jewish, Mexican-American, Puerto Rican, White students	* Ethnicity, class, cognitive, and motivational styles	** While ethnicity is to some extent class sensitive, its effects persist across social-class segments within an ethnic group ** social class causes within-ethnic-group variations as well
Lesser Fifer Clark (1965)	Chinese, Jewish, Black, Puerto Rican students	* verbal ability; reasoning; number facility; space conceptualization	** the 4 ethnic groups were markedly different in both the level of each mental ability and the pattern among those abilities
Lesser Fifer Clark (1967)	Chinese, Black, Irish Catholic students	* replication of '65 study; verbal; ability; reasoning; number facility; space conceptualization	** data for Chinese and Black students similar to data on these from earlier study; I.C. showed neither a distinctive ethnic-group pattern nor similarity of patterns for the two social classes (middle and lower)
Burnes (1970)	Black & White students	* scores on WISC	** significant social-class differences in scores, but no significant racial class differences; scores on sub-tests for Blacks and Whites did not show a pattern by race or cultural group
Backman (1972)		* mental ability factors and relation to ethnicity, social class, and sex	** sex accounts for 69% of the total variance in the shape of patterns; ethnicity for 13%; social-class group, 2%

Siegel Anderson Shapiro (1966)	Black students	* categorization behavior of lower-class and middle-class preschool	** lower-class and middle-class children differed in their ability to group pictures, not objects; l.c. children formed groups based on interdependence of items; m.c. children formed grouped on basis of common physical attributes
Orasanu Lee Scribner (1979)	White & Black children	* development of category organization and free recall	** White children sorted taxonomically more often than did Black children, who showed preference for functional sorting; although they showed differences in organizational preferences, they showed no differences in recall
Rychlak (1975)	White & Black children	* affective learning styles	** moving from positive to negative reinforcement value across lists resulted in less non-specific transfer than moving from negative to positive reinforcement across successive lists; the pattern was more apparent for Blacks than Whites, for lower class than middle class students
Trotman (1977)	Black & White students	* socialization & intellectual environment	** higher level of intellectual home environment for m.c. Whites than for m.c. Blacks; cultural difference in home experience and parent-child interactions in Black and

			White families of same social class
Moore (1985)	Black children	* intelligence test performances as indicated by WISC scores	** Black children adopted by White families scored higher
Kamii Radin (1967)	Black mothers & their pre-school children	* socialization practices	** practices of lower-lower and middle-class Black mothers differ significantly -- social class is not a determinant of behavior but a statement of probability that a type of behavior is likely to occur
Witkin (1950 & 1962) Witkin & Goodenough (1981)		* learning styles; field dependence/ independence	** some learners are field independent and easily perceive a hidden figure on the Embedded Figures Test while others are field dependent and find it difficult to perceive because of the obscuring design
Ramirez Castaneda (1974)	Mexican-American students	* field independent & field sensitive learning styles & behaviors	** Mexican-American children tend to be field sensitive (like to work with others to achieve a common goal) and are sensitive to the feelings and opinions of others; teachers prefer field-independent students and assign them higher grades, though cognitive style is not related to measured intelligence or IQ
Cohen (1969)		* analytic & relational learning styles	** styles of thinking are produced by the kinds of families and groups in to which students are socialized

Ramirez Price- Williams (1974)	Mexican- American, Black, & Anglo students	* field dependent/ independent	** Black and Mexican- American students scored in a significantly more field dependent direction than did Anglos; teachers' level of field independence does not differ significantly from that of Anglo students; social-class effect was not significant in the study
Perney (1976)	Black & White students	* field dependent/ independent	** significant field dependence differences between Black and White students and between males & females; Black females were the most field dependent subjects in the study
Garner Cole (1986)		* field dependent/ independent, locus of control	** both field dependent and locus of control are related to academic achievement with field dependence being more important; when locus of control and field depen- dence were combined, locus of control dominated
Battle Rotter (1963)		* locus of control	** locus of control is related primarily to social class rather than race or ethnicity
8.C			
Carbo **Hodges** **(1988)** Carbo (1987) Carbo Dunn Dunn (1986) Della Valle Dunn Dunn Geisart	**Review of** **literature**	*** Learning** **styles**	** Research indicates that many at-risk stu- dents have not been taught with strategies, methods, materials that accommodate their learn- ing style preferences and strengths ** mismatching students' learning styles with in- struction results in their feeling anxious & even physically ill;

Sinatra Zenhausern (1988) Dunn (1988) Dunn DeBello Brennan Murrain (1981) Dunn Dunn (1978) Hamilton (1983) Hart (1983) Hodges (1982) (1985) (1987) Kroon (1985) LaShell (1986) Lynch (1981) Perrin (1984) Sudzina (1987) Wedlund (1987) Wheeler (1980)			the cerebrum "downshifts" during anxiety ** when learning styles have been matched to appropriate instructional approaches, teachers have reported sharp decreases in stress **Strategies for basing instruction on learning styles:** ** identify & match learning style strengths ** share learning style information with students ** deemphasize skill work requirinig strongly analytic learning style ** use a variety of methods in reading ** involve the tactile & kinesthetic modalities of the learner & include many visuals ** provide appropriate amounts of structure ** allow students to work based on sociological preferences ** establish quiet working areas ** create at least one special work area in a classroom ** experiment with scheduling the most difficult subjects during late morning/early noon hour
8.D Rhodes (1988)	Hopi, Navajo students	* Holistic Teaching/Learning	** The thought processes required & encouraged for survival on the reservation are quite different from those required and encouraged for survival in institutions of higher education ** Native American learning styles emphasize

			** the process of story-telling rather than emphasis on major points or chronology; the "whole picture" is stressed ** use of the presentational or group argumentative process, a circular or spiral process rather than a linear one ** holistic observational techniques over categorization techniques ** consensus in decision making ** responsibility for children at an early age
Becktell (1986)	Navajo learners	* learning process	** the Navajo learning process is composed of 4 components: (1) observe, (2) think, (3) understand/feel, (4) act vs. the Anglo: (1) act, (2) observe/think/clarify, (3) understand
McCartin Schill (1977) Bass Burger (1967-68) Havighurst (1957) Dennis (1943)	American Indian students	* testing	** though scores of American Indian students tend to fall off in higher grades on achievement tests, they continue to score well on non-verbal tests
Wallis (1984)	Indian students	* holistic teaching/ learning	** requires holistic approach to educate Indian students
Werner Begishe (1986)	Navajo learners	* learning process	** Anglos learn through trial & error; Navajos learn before they try & expect trial & success

1 Note: In entries for which subjects are not identified, multiple groups were involved.

2 Note: More's use of "Native Indians" typically refers to Canadian Indians although he uses the term interchangeably with "American Indians."
3 Note: Names of ethnic and tribal groups have been categorized according to the original researcher's/writer's terms and spellings.

APPENDIX B

ALPHABETICAL LISTING OF AUTHORS/RESEARCHERS CODED TO CATEGORIZATION

AUTHORS/RESEARCHERS

Closs	5.G
Cohen, D.	4.E
Cohen, R. A.	1.A, 8.A, 8.B
Cole, E. G.	8.B
Cole, M.	5.F, 6.A
Coleman	7.D
Cooper	8.A
Cox	5.F, 7.C
Cross	4.B
Cullanine	7.C
D'Amato	7.E
Das	7.C
Dasen	5.F
Davidman	7.C
Davis, T.	7.C
Davison	5.G
De Bello	8.C
Della Valle	8.C
Dennis	5.F, 8.D
Deregowski	8.A
Dixon	1.A
Dunn, K.	8.C
Dunn, R.	8.C
Echohawk	2.F
Elliott	3.A
Erickson	7.C
Esen	1.A
Estrada	6.B
Fifer	8.B
Foster	5.F
Foreman	7.A
Freark	2.A
Frost	5.F
Gagne	8.A
Gallimore	7.E
Garner	8.B
Gay	5.F, 5.G, 6.A
Geisart	8.C
Gephart	8.A
Gibson	7.D
Gill	5.D
Gingerich	0.B
Gitter	1.A
Glick	5.F, 6.A
Goldman	1.A
Goodenough	5.F, 7.C, 8.B
Granzberg	5.F
Green	4.B
Greenbaum, F.	7.C
Greenbaum, S.	7.C
Gridley	5.D
Gue	7.C

Gurin, G.	2.F
Gurin, P.	2.F
Guthrie	4.E
Hale	1.A, 6.A
Hall	4.E
Halpin	0.C, 5.F
Hamilton	8.C
Hart	8.C
Havighurst	6.A, 8.D
Henderson	4.E, 5.F
Henry	7.C
Hilliard	1.A
Hodges	8.C
Holsinger	2.F
Holt	1.A
Hunt, J.	1.A
Hunt, L.	5.F
Hynd	5.F
Jarmen	7.C
Jencks	4.E
Jessor, R.	2.F
Jessor, S. L.	2.F
John	0.A, 7.C, 7.E
Jones	2.F
Jordan, C.	7.E
Kagan	5.F, 8.A
Kamii	8.B
Kanungo	7.C
Karlebach	7.C
Kaufman, A. S.	7.C
Kaufman, N. L.	7.C
Kaulbach	7.C
Keefe	5.C
Killbride	8.A
Kirby	7.C
Klein	7.E
Kleinfeld	5.F, 7.C
Knight	2.B
Kroon	8.C
Krywaniuk	7.C
Kuhlberg	2.F
LaBelle	6.B
Languis	5.C
Lao	2.F
LaShell	8.C
Laylin	5.G
LeBrasseur	2.A
Leap	5.G
Lee, C.	8.B
Lee, M. W.	6.A
Lefcourt	2.F
Lesser	6.A, 8.B

Lester	1.A
Letteri	5.C
Lewis	0.B
Light	5.D
Llewellyn	5.D
Loflin	4.C
Lourie	1.A
Lutz	4.B
Lynch	8.C
Madsen	5.F, 8.A
Mahan	4.D, 4.E
Manos	7.C
Marans	1.A
Marashio	2.C
Martin, J. C.	5.F
Martin, R. E.	5.D
Matthews	8.A
Matute-Bianchi	7.D
Mbiti	8.A
McArthur	5.F, 7.C
McCartin	8.D
McClintock, C.	2.B
McClintock, E.	2.B
McCluskey	5.F
McDermott	8.A
McNeil, K.	8.A
McNeil, L.	7.B
McNett	5.G
Messer	7.C
Messick	8.A
Mohatt	7.C
Moore, C. A.	5.F, 7.C
Moore, C. G.	4.B, 5.G
Moore, E.	8.B
More	7.C
Morgan	1.A
Mostofsky	1.A
Munro	2.F
Murrain	8.C
Nettleton	7.C
Newmeyer	1.A
Norton	5.F
Odell	5.F
Ogbu	4.E, 5.E, 7.D
Opler	5.D
Orasanu	8.B
Osborne	5.F
Parsons	2.F
Pea	6.A
Pepper	7.C
Perney	8.B
Perrin	8.C

Peters	7.C
Pettigrew	8.A
Philips	7.C, 7.E
Phillips	8.A
Piestrup	1.A
Posen	2.F
Price-Williams	8.A
Pyatowsky	7.C
Radin	8.B
Ramirez	8.A, 8.B
Renker	5.G
Renzulli	7.C
Reynolds	2.F
Rhodes	8.D
Ribal	2.B
Richardson	8.B
Robbins	8.A
Ross	2.D, 7.A, 7.C
Rotter	8.B
Rychlak	8.B
Ryckman	2.F
Sampson	5.F
Sandefur	8.A
Sanders	1.A
Sapp	3.A
Sawyer	2.B
Scallon, R.	2.E, 7.C
Scallon, S.	2.E, 7.C
Schill	8.D
Schindler	5.G
Schneider	2.F
Scott, P. B.	4.A
Scott, S.	0.A, 5.F
Scribner	5.F, 8.B
Seitz	1.A
Serpell	5.F, 8.A
Shannon	5.F
Shapiro	8.B
Sharp	5.F, 6.A
Sheingold	6.A
Siegel	8.B
Silberman	1.A
Sinatra	8.C
Slade	7.D
Smith, L.	4.B, 5.G
Smith, L. H.	7.C
Smith, M.	4.E
Staub	2.B
Steinberg	5.F
Stodolsky	6.A
Suarez-Orozco	7.D
Sudzina	8.C

APPENDIX C
TAXONOMY OF LEARNING STYLE ASPECTS AND LEARNER ORIENTATIONS

TAXONOMY

ASPECT	LEARNER ORIENTATIONS
abstraction/ operational level	* metaphoric ability . . . lack of creative conceptualization * abstract . . . concrete

FINDINGS:

* Native Americans are more right dominant hemispheric thinking (related to creative abilities).
* Native Americans may benefit from both operative and psychometric intelligence investigations.
* A higher frequency and relative strength was found among Indian students in using imagery for coding and understanding.
* Non-Western populations often use imagery as a dominant way of thinking, writing, conceptualizing, and speaking; think in descriptive abstractions; and emphasize extensive expression of concrete emotional words and metaphors.

SOURCES: Anderson, 1988; Dregoski & Serpell, 1974; John, 1972; More, 1987; Osborne, 1985; Sampson, 1981.

>>>

ASPECT	LEARNER ORIENTATIONS
coding	* imagery . . . verbal/semantics * abstract . . . concrete

FINDINGS:

* Navajo children excel in spelling (visual), while Anglos excel in vocabulary (verbal).
* Indian children learn more rapidly through imitation and direct visual and tactile experiences than through verbal processes.
* Native Indians evidence a higher frequency and relative strength in global processing on both verbal and nonverbal tasks, and in using imagery for coding and understanding.
* Native students tend to use imagery coding (both abstract and concrete) while non-Native students use verbal coding (labels or definitions).
* Both the Chinese and the Navajo cultures employ right- hemispherically oriented myths, metaphors, symbols and allegories.
* Non-Western populations use imagery as a dominant way of thinking, writing, conceptualizing and speaking.
* Non-Western populations think in descriptive abstractions.

SOURCES: Anderson, 1988; Bryant, 1986; Cattey, 1980; Coombs, 1958; Coombs & Coleman; Greenbaum & Greenbaum, 1983; Havighurst, 1957; John, 1972; Karlebach, 1986; More, 1984, 1987; Tafoya, 1982.

>>

ASPECT	LEARNER ORIENTATIONS
communication	* verbal . . . non-verbal * oral . . . aural * orality literacy . . . essayist literacy

FINDINGS:

* The Afro-American child uses language requiring a wide use of many coined interjections; uses considerable body language; relies on words that depend upon context for meaning; prefers using expressions that have several connotations; adopts a systematic use of nuances of intonation and body language such as eye movement and positioning; prefers oral-aural modalities for learning communication; and is highly sensitive to others' nonverbal cues.
* Black children were found to be more feeling oriented, people oriented, and more proficient at nonverbal communication than White children.
* Black culture emphasizes the nonverbal; experience counts, not what is said.
* Black culture develops proficiency in nonverbal communication.
* Factors which creat good rapport in teacher-Black student interaction include: warmth, verbal interplay during instruction, rhythmic style of speech and distinctive intonation in speech patterns.
* Stylistic dimensions of the oral tradition in Black culture include call and response, rhythmic patterns, spontaneity and concreteness.
* Athabaskan Indian children demonstrate orality literacy rather than essayist literacy.
* Traditional Indian communities have highly sophisticated forms of nonverbal communication.
* Native North Americans may identify emotions from vocalizations by members of their own culture far more accurately than those by members of other cultures; may perceive nonverbal behaviors of teachers differently because of cultural identity; may develop a broad cluster of spatial-field-independence abilities and a distinctive cluster of abilities involving inductive reasoning from nonverbal stimuli because of ecology and child-rearing practices; and evidence a higher frequency and relative strength in global processing on both verbal and nonverbal tasks.
* Non-Western populations do best on verbal tasks and often find their communication styles are in variance with the Western communication styles.
* Concrete/abstract differences may be more an indication that culturally irrelevant ideas become more relevant when presented concretely.
* The Native American system of legends is the best example of imagery coding.
* The Navajo custom of retice ce on a first encounter with an unfamiliar person or situation creates difficulties on the very first day of school.

SOURCES: Abkar, 1975; Albas, McCluskey, Albas, 1976; Anderson, 1988; Berry, 1980; Bradley, 1984; Cohen, 1969; Cooper, 1980, Erickson & Mohatt, 1982; Gibson, 1983; Gitter, Black & Mostofsky, 1972; Hale, 198_; Hilliard, 1976; Kleinfeld, 1972; Lester, 1969; Matute-Bianchi, 1986; More, 1987; Newmeyer, 1970; Ogbu, 1974, 1977, 1982a, 1982b, 1983, 1986, 1987; Osborne, 1985; Philips, 1972; Piestrup, 1973; Scallon & Scallon, 1979a, 1983; Silberman, 1970; Smith & Renzulli, 1984; Suarez-Orozco, 1986; Tafoya, 1982; Vygotski, 1978; Young, 1970.

>>

ASPECT	LEARNER ORIENTATIONS
discipline	* misbehavior punished . . . misbehavior ignored * stringent/structured . . . learn from national consequences

FINDINGS:

* Navajo students rebel against the stringent discipline of high schools and choose not to study the most disciplined, visible Western forms of education.
* Threats of physical punishment and force are unacceptable and ineffective methods of behavioral control in Navajo culture while teasing or shaming are common.
* In traditional American Indian cultures, obedience is approached through explanations for desired behavior, the grandparent serves as main disciplinarian, and there is rigorous training to teach moral standards and develop character.
* Culturally specific management routines compatible with Navajo culture are more effective: ignoring misbehavior or lowering one's eyes, indirectly referring to the misdeed while praising honorable behavior standards.

SOURCES: Bradley, 1984; Green, 1977; Guthrie & Hall, 1981; Jencks, Smith, Acland, Bane, Cohen, Gintis, Heyns, Michelson, 1972; Light & Martin, 1985; Mahan & Henderson, 1984; Ogbu, 1978; Opler, 194‹; Vogt, Jordan & Tharp, 1987.

>>

ASPECT	LEARNER ORIENTATIONS
evaluation	* teacher controlled . . . student initiated * teacher test . . . self test

FINDINGS:

* Traditional American Indian learning focuses on process over product, legends and stories as traditional teaching paradigms, knowledge obtained from the self, and cognitive development through problem-solving techniques.
* Native American people evidence reflective more than impulsive processing (watch-then-do vs. trial-and-error).
* Though scores of American Indian students tend to fall off in higher grades on achievement tests, they continue to score well on nonverbal tests.

SOURCES: Bass & Burger, 1967-68; Dennis, 1943; Havighurst, 1957; McCartin & Schill, 1977; More, 1987; Rhodes, 1988; Scallon & Scallon, 1983; Tafoya, 1982.

>>>

ASPECT	LEARNER ORIENTATIONS
family relationship/ interaction	* interdependence . . . independence * extended . . . nuclear

FINDINGS:

* An important determinant of education attainment is family background.
* Family size and ordinal position of the child may interact with other factors in influencing prosocial behavior.
* The larger size of the Mexican-American family, strength of familial interdependence, and patterning of relationships are reported as

reasons for their relatively greater preference for cooperative or prosocial outcomes in interdependent situations.

* Larger family size is associated positively with generosity.
* Traditional American Indian child-rearing practices focus on children observing from subordinate positions.
* Navajo children are given tremendous responsibility at a very young age. Navajo girls, as members of a matrilineal culture, have prestige and influence over what happens in the home and are often owners of livestock and materials.
* American Indians attach a high degree of importance to childhood as the time for beliefs, values, and attitudes instruction.
* Native North American Indians may develop a broad cluster of spatial-field-independence abilities and a distinctive cluster of abilities involving inductive reasoning from nonverbal stimuli because of ecology and child-rearing practices.
* The pattern of multiple caretakers and companion groups in Native Hawaiian natal culture manifests itself in high rates of peer interaction, frequent scanning for other children's errors, and offering and soliciting peer help.
* Separation of sexes in traditional Navajo families clearly defines cultural roles.
* Styles of thinking are produced by the kinds of families and groups into which students are socialized--Black children adopted by White families were found to score higher.
* When compared with Caucasian and Black babies, Chinese babies are more amenable and adaptable in situations where other babies register annoyance and complain.
* Zambian mothers' high contact, loving environment for their babies provides more handling and feeding contact, thereby producing more stimulation, alertness, social interest, and consolability in their children.
* In the Nigerian culture, children grow up in a social network characterized by physical closeness, acceptance, and care.

SOURCES: Banks, 1988; Brazelton, Young & Bullowa, 1971; Cattey, 1980; Cohen, 1969; Esen, 1973; Freedman, 1979; Gallimore, Boggs & Jordan, 1974; Gill, 1982; Guthrie & Hall, 1981; Hale, 1981; Halpin, Halpin & Whiddon, 1980; Jencks, Smith, Acland, Bane, Cohen, Gintis, Heyns, Michelson, 1972; Jordan, 1977, 1984; Jordan, Tharp & Vogt, 1985; Knight & Kagan, 1982; Light & Martin, 1985; McClintock, Bayard & McClintock, 1979; Mahan & Henderson, 1984; Moore, 1985; More, 1987; Ogbu, 1978; Osborne, 1985; Ribal, 1963; Sawyer, 1966; Scallon & Scallon, 1979b, 1983; Staub, 1970, 1971a, 1971b; Tafoya, 1982; Valdivieso, 1986; Vogt, Jordan & Tharp, 1987.

>>

ASPECT	LEARNER ORIENTATIONS
field dependence/ independence	* less able to separate part from whole . . . able to impose organizational structure

FINDINGS:

* Afro-American people tend to view things in their entirety and not as isolated parts and to approximate space, number, and time instead of aiming for complete accuracy.

* Significant field dependence differences exist between Black and White students and between males and females; Black females evidence the most field-dependence.
* Native North American Indians may develop a broad cluster of spatial-field-independence abilities and a distinctive cluster of abilities involving inductive reasoning from nonverbal stimuli because of ecology and child-rearing practices.
* Native American people evidence a higher frequency and relative strength in global processing on both verbal and nonverbal tasks.
* Native North American Indians evidence a relative strength in simultaneous processing, but a possibility that sequential processing abilities develop much slower than simultaneous skills because they are not used in the primary grades.
* A field dependent person is less able to separate a part from the whole, but is more conscious of other people and therefore often socially intuitive.

SOURCES: Anderson, 1988; Banks, 1988; Cohen, 1969; Cullanine, 1985; Garner & Cole, 1986; Hale, 1981; Hilliard, 1976; Kagan & Buriel, 1977; MacArthur, 1968; Messick, 1970; More, 1984, 1987; Osborne, 1985; Perney, 1976; Ramirez, 1973; Ramirez & Castaneda, 1976; Ramirez & Price-Williams, 1974; Weitz, 1971; Witkin, Moore, Goodenough & Cox, 1977; Witkin, 1950, 1962; Witkin & Goodenough, 1981.

>>>

ASPECT	LEARNER ORIENTATIONS
hemispheric orientation	* right . . . left * holistic . . . logical, analytical * divergent . . . convergent * intuition . . . intellect * subjective . . . objective * concept formation . . . specialization

FINDINGS:
* Both the Chinese and the Navajo cultures employ right- hemispherically oriented myths, metaphors, symbols, and allegories.
* Navajos demonstrate a left-ear (right cerebral hemisphere) advantage compared to the traditional right ear in Anglos.
* Native Americans are more dominant in right hemispheric thinking.
* Native North Americans are more dominant in right hemispheric thinking related to creative abilities.
* Relational learners fail in school far more often than analytical learners.

SOURCES: Cattey, 1980; Chrisjohn & Peters, 1986; Foreman, 1987; Lee, 1986; More, 1987; Osborne, 1985; Ross, 1982; Scott, 1979; Scott, Hynd, Hunt & Weed, 1979; Webb, 1983; Witkin, 1977.

>>

ASPECT	LEARNER ORIENTATIONS
information processing system/	* simultaneous . . . sequential * holistic, emphasizing whole . . . analytic, emphasizing individual parts

cognitive processing	* integrates without temporal ordering . . . integrates with temporal or serial ordering * spatial events . . . verbal events * memorization ability . . . lack of highly developed memorization ability * approximation . . . accuracy

FINDINGS:

* Afro-American people tend to view things in their entirety and not as isolated parts; to prefer inferential reasoning rather than deductive or inductive reasoning; and to approximate space, number and time instead of aiming for complete accuracy.
* Navajo students speak a language that does not have a word for multiply, divide, if, cosine or sine, nor do students have the beliefs associated with them.
* Navajo students find it difficult to accept (1) equations as equal if the member parts are not identical and (2) problems in which a hypothetical situation is expressed.
* Navajo students learn more effectively through culture-based mathematics though main-stream mathematics cannot be pushed aside; very little research has been done relating the indigenous mathematics of Native Americans to school mathematics.
* In traditional Indian cultures, children are required to develop excellent memory skills, skills which may be a barrier in higher mathematics.
* American Indians' holistic nature of thought characterizes a preference for working with the whole before attempting analysis of parts or sections (linear).
* Black, Chinese, Jewish, and Puerto Rican students are markedly different in both the level of each mental ability and the pattern among those abilities.
* Black students, lower-class and middle-class children differ in their ability to group pictures, not objects; lower-class children form groups based on interdependence of items; middle-class children formed grouped on basis of common physical attributes.
* White children sort taxonomically more often than do Black children who show preference for functional sorting; although they show differences in organizational preferences, they show no differences in recall.
* Indian students use simultaneous processing more frequently and effectively than non-Indian students, particularly non-assimilated Indian students.
* For students whose internal cognitive processing emphasizes the global or holistic, whole language and sight-word vocabulary building are more effective than the more traditional phonics and sounding-out-words approaches.

SOURCES: Banks, 1988; Bradley, 1984; Cazden & John, 1971; Cohen, 1969; Das, Kirby & Jarman, 1979, 1982; Gardner, 1959; Hale, 1981; Hilliard, 1976; John, 1972; Kagan, 1966; Kaufman & Kaufman, 1983; Kirby, 1984; Krywaniuk, 1974; Lesser, Fifer & Clark, 1965, 1967; Moore, 1982; More, 1984, 1987; Orasanu, Lee & Scribner, 1979; Philips, 1972; Siegel, Anderson & Shapiro, 1966; Smith, 1981; Swisher & Deyhle, 1987; Vogt, Jordan & Tharp, 1987; White, Tharp, Jordan & Vogt, 1988.

>>>

ASPECT	LEARNER ORIENTATIONS
learning pattern/ cognitive style	* holistic . . . utilitarian * applications oriented . . . theory oriented * conjunctive concepts . . . disjunctive concepts * cognitive . . . affective . . . physiological

FINDINGS:

* Traditional American Indian learni, focuses on process over product, legends and stories as traditional teaching paradigms, knowledge obtained from the self, cognitive development through problem-solving techniques.
* The application-oriented approach in teaching math may be even more important to Native students.
* Navajo students learn more effectively through culture-based mathematics though mainstream mathematics cannot be pushed aside; very little research has been done relating the indigenous mathematics of Native Americans to school mathematics.
* Navajo students in traditional Indian cultures are required to develop excellent memory skills, skills which may be a barrier in higher mathematics.
* Socioeconomic and cultural factors influence the effectiveness of education for the Navajo perception of education as an all-encompassing, life-long process contrasted with the institutional systemized, and fragmented nature of mainstream, educational approaches.
* American Indians are often unable to solve mathematics problems that are not perceived as culturally relevant.
* Native speakers of Navajo find it difficult to construct an exactly parallel systematic analysis of math concepts in English.
* Picuris American Indian math involves knowing when "not" to count -- computational "silence"; a math operation that is not typically performed in an American Indian language creates conflict between what is linguistically possible and culturally real.
* Presenting math concepts in English without consideration of Kpelle (of Liberia) language development and cultural usage led to rote memorization without comprehension of concepts.
* Navajo students' styles of thought and communication in the Navajo language influence the students' approach to learning math concepts and solving problems.
* A higher frequency and relative strength in processing visual/spatial information.
* Native Hawaiian children's motivation, content coverage and industriousness does not result in school success as measured on standardized tests; selection of educational practices based, in part, on their cultural compatibility produces success on standardized reading tests.
* Native Hawaiian child-rearing patterns of multiple caretakers and companion groups in natal culture manifests itself in high rates of peer interaction, frequent scanning for other children's errors, and offering and soliciting peer help.
* Africans are socially, not task, oriented.
* The Chinese have a traditional style of learning that emphasizes external forms and rote memorization.

SOURCES: Anderson, 1988; Banks, 1988; Becktell, 1986; Bradley, 1984; Bradshaw & Nettleton, 1981; Brown, 1986; Cheek, 1984; Cooper, 1980; Das, Kirby & Jarman 1979, 1982; Das, Manos & Kanungo, 1975; Davidman, 1981; Gagne & Gephart, 1968; Gallimore, Boggs & Jordan, 1974; Gay & Cole, 1967; Guthrie & Hall, 1981; Jencks, 1972; John, 1972; Jordan, 1977, 1984; Kaufman & Kaufman, 1983; Killbride & Robbins, 1968; Kirby, 1984; Krywaniuk, 1974; Leap, McNett, Cantor, Baker, Laylin & Renker, 1982; Lesser, Fifer & Clark, 1965, 1967; Mahan & Henderson, 1984; Marashio, 1982; Matthews, 1973; McDermott, 1980; Messer, 1976, Moore, 1982; More, 1984, 1987; Norton, 1975; Ogbu, 1974, 1977, 1978, 1982a, 1982b, 1983, 1986, 1987; Osborne, 1985; Pepper & Henry, 1986; Rhodes, 1988; Scallon & Scallon, 1983; Schindler & Davison, 1985; Scott, 1983; Smith, L., 1981; Tafoya, 1982; Vernon, 1969; Vogt, Jordan & Tharp, 1987; Wallis, 1984; Weitz, 1971; Werner & Begishe, 1986; Williams, 1986; Wilson, 1971; Wober, 1967.

>>

ASPECT	LEARNER ORIENTATIONS
locus of control	* internal . . . external

FINDINGS:

* Specific parental behaviors across both American Indian and White cultures appear to be antecedents of an internal locus of control and positive self-esteem.
* Ethnic minorities and those from low SES levels score in a more external locus of control direction than Caucasians.
* Differences in locus of control for Black students may disappear with adequate SES controls.
* Measuring locus of control for Black youth requires distinguishing how much control one believes most people in society possess (ideological control) and how much control one believes one personally possesses (personal control).
* Native North American cultures may define self-control differently than other cultures.
* The Chinese have a traditional style of learning that emphasizes external forms and rote memorization.
* Both field dependence and locus of control are related to academic achievement with field dependence being more important.
* Locus of control is related primarily to social class rather than race or ethnicity.

SOURCES: Banks, 1988; Battle & Rotter, 1963; Echohawk & Parsons, 1972; Garner & Cole, 1986; Gurin, Gurin, Lao & Beattie, 1969; Halpin, Halpin & Whiddon, 1980; Jessor, Graves, Hanson & Jessor, 1968; Jones & Zoppel, 1979; Lefcourt, 1966; Munro, 1979; Ogbu, 1974, 1977, 1982a, 1982b, 1983, 1986, 1987; Osborne, 1985; Parsons & Schneider, 1974; Reynolds, 1976; Ryckman, Posen & Kulberg, 1978; Trimble, 1981; Trimble & Richardson, 1982; Tyler & Holsinger, 1975.

>>

ASPECT	LEARNER ORIENTATIONS
perception channel/ sensory mode/ external conditions	* auditory * verbal * tactile * visual * spatial * kinesthetic

FINDINGS:

* Navajo youngsters manifest greater sensitivity to geometric designs than White children of the same age and excel at tasks requiring fine visual discrimination.
* Indian pre-school children evidence fine motor coordination.
* Northern Canadian Indians and Inuits evidence a higher frequency and relative strength in processing visual/spatial information.
* Indian and Inuit children are most successful at processing visual information and have the most difficulty performing well on verbal content tasks. Kaulback cautioned that these findings did not imply a deficit in the ability to conceptualize through language.
* Navajo Indian children learn more rapidly through imitation and direct visual and tactile experiences than through verbal processes.
* American Indian children learn more rapidly through imitation and direct visual and tactile experiences than through verbal processes.
* American Indian children of the Southwest are visual in approaches to the world.
* The visual acuity differences of Native North Americans may be tuned by the early visual environment; the carpentered nature of urban surroundings may result in greater awareness of horizontal and vertical lines among urban dwellers as opposed to people who live in non-carpentered environments.

SOURCES: Anhelm, 1974; Annis & Frost, 1973; Bowd, 1971; Cattey, 1980; Colliers, 1967; Coombs, 1958; Feldman & Dittman, 1970; Havighurst, 1957; John, 1972; Kaulbach, 1984; Kleinfeld, 1973, 1975, 1979; Kuipers; More, 1987; Osborne, 1985; Vernon, 1969.

>>

ASPECT	LEARNER ORIENTATIONS
reflective/ impulsive processing	* watch/listen-then-do . . . trial-and-error

FINDINGS:

* Yaqui culture expects children to learn by watching and modelling; a task should not be attempted until it can be performed well. The cultural learning style conflicts with the school learning style when students are given credit for trying and then forced to attempt the task before ridiculing peers.
* Rather than "explain-read-do-recite" approaches to learning, Navajos prefer learning through extensive observation and imitation, along with the assurance of success, learning through reflective more than impulsive processing.

* The Navajo learning process is composed of 4 components: (1) observe, (2) think, (3) understand/feel, (4) act vs. the Anglo: (1) act, (2) observe/think/clarify, (3) understand.
* Anglos learn through trial and error; Navajos learn before they try and expect trial and success.

SOURCES: Appleton, 1983; Becktell, 1986; Mahan & Henderson, 1984; More, 1984, 1987; Swisher & Deyhle, 1987; Rhodes, 1988; Wax, Wax & Dumon, 1964; Werner & Begishe, 1986.

>>>

ASPECT	LEARNER ORIENTATIONS
social interaction/ motivation	* competitive . . . cooperative * aggressive . . . passive * interpersonal . . . intrapersonal * antisocial . . . prosocial * respect for elders . . . elders as equals

FINDINGS:
* Navajo and Chinese cultures stress harmony and unity--a basic "oneness."
* Navajo mothers use their eyes rather than their voice to attract the baby's attention; the babies show greater passivity than Anglo babies.
* Chinese babies are more amenable and adaptable in situations where other babies register annoyance and complaint.
* Zambian mother's high contact, loving environment for their babies provide more handling and feeding contact and produce more stimulation, alertness, social interest and consolability in their children.
* In Nigerian culture, children grow up in a social network characterized by physical closeness, acceptance and care.
* Black children are more feeling oriented, people oriented and more proficient at nonverbal communication than White children.
* Many different American Indian tribes have the following values that may influence school performance: avoidance of competition, high value on cooperation, strong peer influence.
* Black and White urban college students demonstrate participative and collaborative learning styles more than avoidant, competitive, dependent or independent.
* In Navajo culture, cooperation is stressed over competition.
* Navajo students may avoid eye contact with a teacher as a sign of respect for an elder. The same is true in many Hispanic cultures.
* Navajo children are given tremendous responsibility at a very young age; Navajo girls, as members of a matrilineal culture, have prestige and influence over what happens in the home and are often owners of livestock and materials.
* For Navajo students, praise may not be reinforcing.
* Cheyenne Indian children are to have parents' full attention, subsequently learning to respect elders; chastisement of children is abhorred.
* Cheyenne Indian children are encouraged to play in such ways that train them for adult responsibilities.
* Mexican students' interactions with their teachers tend to be formal.
* Mexican culture stresses that students are to respect authority; emphasize cooperation.

* Traditional American Indian learning focuses on process over product, legends and stories as traditional teaching paradigms, knowledge obtained for the self, and cognitive development through problem-solving techniques.
* White Canadians and Cree Indians develop high self-esteem in school through praise of grades and parental pleasure at their effort.
* Hawaiian teaching-learning interactions are characterized by voluntary participation; traditional school-culture script is "one person at a time."
* For both Native Hawaiian and Navajo children, indirect praise and praise to a group are more effective than direct praise of one child.
* A higher level of intellectual home environment exists for middle-class Whites than for middle-class Blacks; cultural differences exist in home experiences and parent-child interactions in Black and White families of the same social class.
* Practices of lower-lower and middle-class Black mothers differ significantly--social class is not a determinant of behavior but a statement of probability that a type of behavior is likely to occur.
* Mexican-American children tend to be field sensitive (like to work with others to achieve a common good) and are sensitive to the feelings and opinions of others; teachers prefer field-independent students and assign them higher grades, though cognitive style is not related to measured intelligence or IQ.
* Styles of thinking are produced by the kinds of families and groups into which students are socialized.

SOURCES:
Abkar, 1975; Albas, McCluskey & Albas, 1976; Amodeo & Brown, 1986; Anderson, 1988; Au, 1980; Au & Jordan, 1981; Banks, 1988; Boykin, 1978; Brazelton, Young & Bullowa, 1971; Brown, 1980; Callaghan; Cattey, 1980; Cazden, 1982; Cohen, 1969; D'Amato, 1986; Dumont, 1972; Erickson & Mohatt, 1982; Esen, 1973; Estrada & LaBelle, 1979; Freedman, 1979; Gitter, Black & Mostofsky, 1972; Goldman & Sanders, 1969; Guthrie & Hall, 1981; Hale, 1981; Jencks, Smith, Acl'an., Bane, Cohen, Gintis, Heyns, Michelson, 1972; Kagan & Madsen, 1971; Kamii & Radin, 1967; Knight & Kagan, 1982; LeBrasseur & Freark, 1982; Light & Martin, 1985; Llewellyn & Hoebel, 1967; Mahan & Henderson, 1984; Marans & Lourie, 1967; Miller & Thomas, 1972; Morgan, 1976; Ogbu, 1978; Osborne, 1985; Philips, 1972; Piestrup, 1973; Ramirez & Castaneda, 1974; Ramirez & Price-Williams, 1974; Sapp, Elliott & Bounds, 1983; Silberman, 1970; Swisher & Deyhle, 1987; Tafoya, 1982; Trotman, 1977; Wachs, Uzgiris & Hunt, 1971; Van Ness, 1981; Vogt, Jordan & Tharp, 1987; Wober, 1967; Wolcott, 1967; Young, 1970.

>>

ASPECT	**LEARNER ORIENTATIONS**
visual discrimination/ attention	* visual acuity . . . lack of acuity

FINDINGS:
* Navajo children excel at tasks requiring fine visual discrimination.
* Navajo mothers use their eyes rather than their voice to attract their baby's attention.

* Navajo children are visual in their approach to the world.
* Particularly the Navajo, as well as the Chinese, are likely to be better in visual discrimination skills.
* Visual acuity differences may be tuned by the early visual environment; the carpentered nature of urban surroundings may result in greater awareness of horizontal and vertical lines among urban dwellers as opposed to people who live in non-carpentered environments.
* Blacks and Native North Americans perceive elements as a part of a total picture.
* Native North American may prefer contrast over Anglo preferences of angularity, linearity, and curvilinearity.

SOURCES:
Anderson, 1988; Anhelm, 1974; Annis & Frost, 1973; Callaghan, 1969; Cattey, 1980; Colliers, 1967; Dasen, 1975; John, 1972; Killbride & Robbins, 1968; Kleinfeld, 1973, 1975, 1979; Osborne, 1985; Swanson & Henderson, 1979.

ASPECT	LEARNER ORIENTATIONS
world orientations	* global . . . analytic * present . . . future * analytic . . . relational * obverse to learn . . . participate to learn * culture-based content . . . mainstreamed content * culture sensitive . . . culture insensitive

FINDINGS:
* The non-Western heritage of Afro-Americans suggests knowledge stems from the proposition that, "I feel, therefore, I think, therefore, I am" vs. "I think, therefore, I am."
* Afro-American people tend to view things in their entirety and not as isolated parts.
* Schools do not support the natural energy level of Black children who need an active environment for successful learning; Black children elicit more punishment and are labeled hyperactive more frequently because of their high motoric activity.
* White children are object oriented and have numerous opportunities to manipulate objects and discover properties and relationships; Black children are more people oriented; the affective orientation is linked to the greater continuity in the behavior of Black mothers.
* A utilitarian education is commonly taught in Euro-American schools.
* American Indian children often observe from subordinate positions.
* The Yaqui world-view is not accommodated by modern industrial society and its system of education.
* American Indian children are taught to respect life.
* Hopi Indians have strengths which are not tapped by tests traditionally used by Western societies.
* Hopi Indians may develop compensatory skills because of rigors of survival in traditional environments.
* Traditional American Indian students do not become more future-oriented with age, as do Anglo students.

* Native people evidence a higher frequency and relative strength in global processing on both verbal and non-verbal tasks.
* Non-Western populations often differ in world views and cosmic orientations; value harmony with nature; view religion as inseparable from culture rather than as a distinct part; accept the world view of other cultures without expressing the superiority of their own; perceive elements as a part of a total picture; often find their communication styles are in variance with the Western communication styles; think in descriptive abstractions; perceive thought as holistic; and learn better from materials which have a human/social content and which are characterized by fantasy and humor.
* The Navajo learning process is composed of 4 components: (1) observe, (2) think, (3) understand/feel, (4) act vs. the Anglo: (1) act, (2) observe/think/clarify, (3) understand.
* Navajo cultural and religious taboos may be ignored by certain literature selections and art activities.

SOURCES:

Allport & Pettigrew, 1957; Anderson, 1988; Baldwin, 1980; Becktell, 1986; Bradley, 1984; Bradshaw & Nettleton, 1981; Bruner, 1965; Chilcott, 1985; Cohen, 1969, 1971; Cole, Gay, Glick & Sharp, 1971; Crowell, 1977; Davis & Pyatowski, 1976; Dennis, 1943; Dixon & Foster, 1971; Gallimore, Boggs & Jordan, 1974; Gay & Cole, 1967; Gridley, 1974; Gue, 1971; Guthrie & Hall, 1981; Hale, 1981; Havighurst, 1976; Hilliard, 1976; Jencks, Smith, Acland, Bane, Cohen, Gintis, Heyns, Michelson, 1972; Keefe, 1985; Keefe & Languis, 1983; Klein, 1981; Kleinfeld, 1973, 1975, 1979; Lee, 1986; Light & Martin, 1985; Mahan & Henderson, 1984; Marashio, 1982; Masden, 1982; Matthews, 1973; Mbiti, 1970; Moore, 1982; More, 1984, 1987; Morgan, 1976; Ogbu, 1978; Osborne, 1985; Rhodes, 1988; Scallon & Scallon, 1979b; Schindler & Davidson, 1985; Shannon, 1975, 1976; Smith, 1981; Tafoya, 1982; Vogt, Jordan & Tharp, 1987; Webb, 1983; Witkin, 1967; Young, 1970.

Appendix 16

END

U.S. Dept. of Education

Office of Education
Research and
Improvement (OERI)

ERIC

Date Filmed

March 21,1991